

# ➤ Broadband Power

TOTAL POWER SOLUTIONS BY ALPHA TECHNOLOGIES



alpha





# Alpha Technologies

## ➤ CableUPS®

Alpha Technologies pioneered the concept of reliable uninterruptible power for the broadband cable television industry, and in the process has set a 30-year precedent for visionary, market-driven power solutions. Today, Alpha continues to focus on providing the communications industry with the most reliable, innovative and efficient powering solutions available.

## ➤ Intelligence

Alpha works in all areas of communications power, engineering complete systems for specific applications, technologies and regions: from an Outside Plant Pole Mount enclosure in the Northeast with wind-driven snow to a Power Node Ground Mount system in the desert heat of the Southwest. Alpha produces powering systems to operate in specific climates and applications allowing service operators to better manage assets and resources, and provide greater service reliability and profitability.

## ➤ Sustainability

Energy efficiency is a critical component of a powering communications network. More than that, it makes economic sense. Alpha's next generation HP (High Performance) powering systems enable service operators to focus on energy efficiency while assuring unprecedented reliability, extended battery runtimes and increased flexibility.

## ➤ Collaboration

Working with customers to be more competitive and environmentally-conscious makes us successful, and hundreds of dedicated Alpha engineers, technicians, craftspeople and field specialists share this focus. These highly motivated people create proactive solutions that help shape the future of the industry and Alpha itself – a company where people and power come together.

## ➤ The Alpha Group

The Alpha Group represents an alliance of independent companies sharing a common philosophy – to create world-class powering solutions. Collectively, Alpha Group members develop and manufacture AC and DC power conversion, protection and standby products. Applications for these products include broadband cable, telecom, commercial, industrial and renewable energy for a worldwide customer base. In addition, our companies provide a range of installation and maintenance services. Members of The Alpha Group include Alpha Technologies, Alpha Energy, Alpha Industrial Power, Argus Technologies and G.B. Enterprises.



**XMHP**  
HIGH PERFORMANCE **2**

transformer  
module

UNLATCH RIBBON CABLE RETAINER  
BEFORE FULLY REMOVING MODULE

OUTPUT

ALARM

ESC

BATTERY  
BREAKER

- BATTERY  
INPUT +

N+1

N+1

OUTPUT 2

OUTPUT 1B

LRI

OUTPUT 1A





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# Alpha Technologies Services

## ➤ Alpha Depot Repair Services

Alpha's repair depots are located across the country offering convenient pick-up and drop off service. Our repair and development laboratories are designed for product repair and refurbishment, product improvement, research and modification, to assist with your specific needs.

## ➤ Field Service Calls

Trained Alpha field service engineers are dispatched 24 hours per day, 7 days per week in specially equipped and stocked Alpha service vehicles to perform routine system maintenance or emergency repair service.

## ➤ Preventive Maintenance

An on-going preventive maintenance program helps ensure optimum system reliability and equipment life. Alpha's service plan options include performing routine scheduled maintenance, testing of local and remote alarm operation, and analyzing local data for special requirements. Local service logs are updated and information is uploaded to our central database.

## ➤ Turnkey Installation

Our complete power system integration and turnkey installation services include right-of-way and easement procurement, site preparation, equipment installation, utility hookup coordination, system turn-up and system testing.

## ➤ Turn-Up and Test Services

Turn-up and test services for Headend, DC Plant and Outside Plant installations represent a significant first step in ensuring long-term system reliability. Our services include verification of proper installation, completion of Alpha start-up procedures and system testing.

## ➤ Construction Services

With a national network of contractors and project managers, Alpha Technologies Services can provide turnkey solutions for outside plant, headend, telecommunications, industrial and renewable energy applications.

# Depot Repair

Extending the life of your power network

- Complete repair and refurbishment of all Alpha product lines
- Repair of all major brand equipment for cable headend, fiber optics, line gear, power supplies and test equipment
- Exclusive two and three year warranties available on refurbished Alpha and Lectro power supplies
- Warranty and non-warranty repair



## Cable/Telecommunications Equipment Repair Program

Pick-up services customized to customer's needs  
 Quality assurance testing on all equipment  
 Full distortion testing on all line equipment  
 Full FCC testing on all headend equipment  
 Emergency and rush services available  
 Personalized service from your sales professional  
 Advance replacement capabilities  
 Pick up and delivery service

## Optional Services

Hybrid and component sales  
 Field intensity surveys  
 Pilot frequency changes  
 Line equipment upgrades  
 Line equipment modifications  
 Modulator/processor frequency offsets and/or channel changes  
 Modulator video color compliance upgrades  
 Videocipher repairs and upgrades  
 Test equipment repair and calibration  
 Headend testing documentation  
 Prototype testing and evaluation  
 Computer and monitor repair  
 On-site calibrations  
 Technical support  
 Customized management reports:
 

- Repair costs each month
- Year-to-date for each system
- Repair cost per module

 Line equipment testing documentation

## Power Supplies

Standby power supply  
 Inverter card assembly  
 AC power supply  
 Argus rectifiers  
 Status monitoring
 

- Transponders
- EDSM
- APM/USM

## Line Equipment

Non-AGC active module  
 Single-pilot AGC module  
 Dual-pilot AGC module  
 Feedforward module  
 Multifunction network amplifier  
 Amplifier  
 Amplifier w/AGC  
 Motherboard assembly  
 Housing: repair and/or clean  
 Fiber optic node receiver/transmitter

## Test Equipment

Cable TV analyzers  
 Signal level meters  
 Cable leakage meters  
 Cable locators  
 Time domain reflectometers (TDRs) and OTDRs  
 On-site calibration certification

## Headend Equipment

Modulator/processor  
 Modulator/demodulator/processor assembly  
 Continuum/prisma  
 Signal level meter  
 SAT receivers  
 DigiCipher  
 Sound IF module output LO module, etc.  
 Fiber optic headend transmitter/receiver



Power Supplies



Line Gear



Fiber Optic



Headend

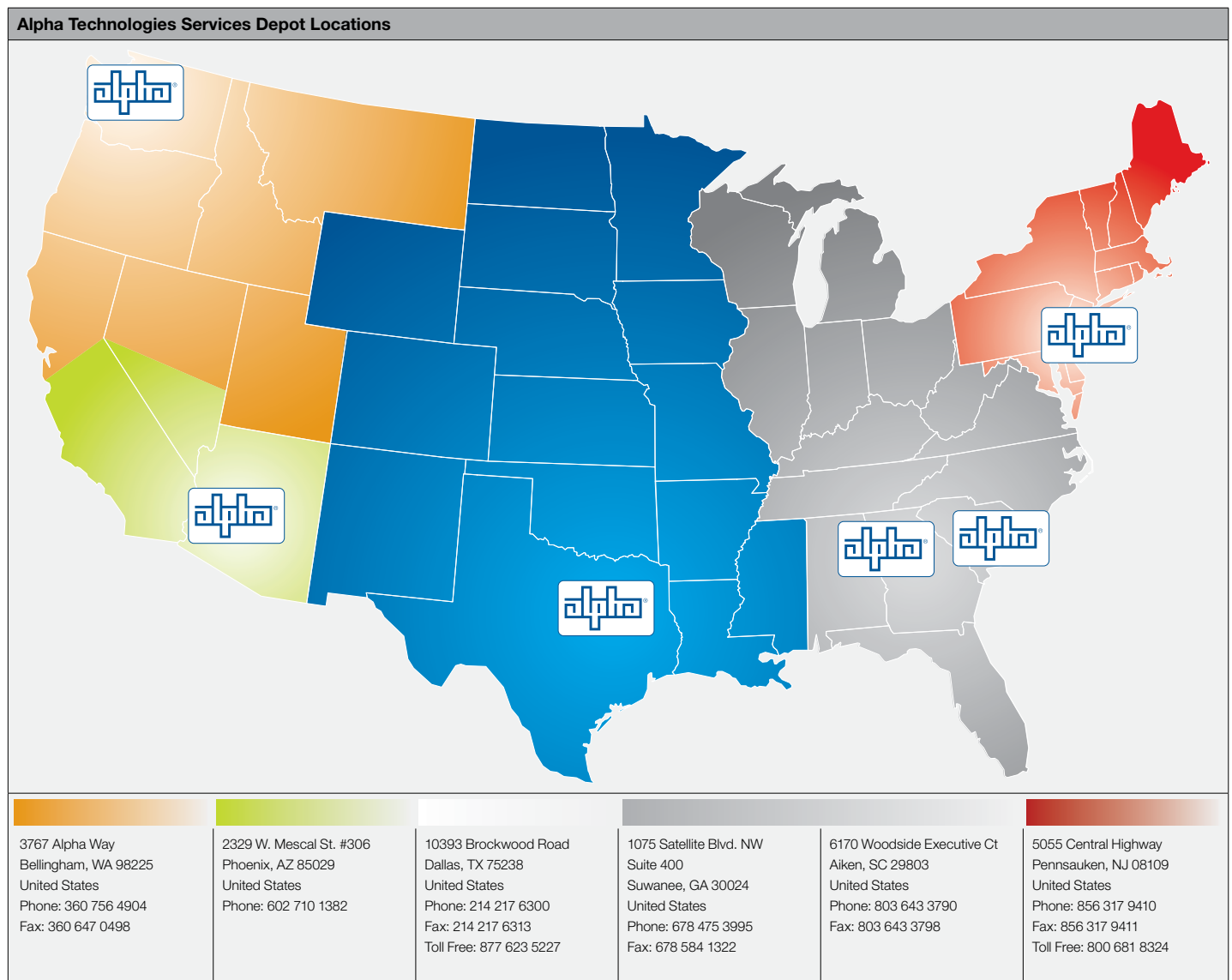


Test Equipment



# Alpha Technologies Services Map

- Alpha's Repair Depots are located across the country
- State of the art repair and development laboratories are designed for product repair and refurbishment, product upgrades, research and modification
- Customizable to assist with your specific needs
- On-site calibration and repair of test equipment
- Alpha certified technicians



# Field Services

Extending the life of your power network



- Preventive maintenance
- Plant hardening
- Network power management
- Construction services
- Turnkey installation
- Turn-up and test services

Trained Alpha Field Service technicians and engineers are dispatched 24 hours per day, 7 days per week to perform routine system maintenance or emergency repair service. In addition, Alpha Technologies Services can combine small-, medium- and large-scale network hardware upgrades with the necessary installation manpower.

## Preventive Maintenance

An on-going preventive maintenance program helps ensure optimum system reliability and equipment life. Alpha's service plan options include performing routine scheduled maintenance, testing of local and remote alarm operation, and analyzing local data for special requirements. Local service logs are updated and information is uploaded to Alpha's central database.

- Develop historical data file for each power system component
- Complete preventive maintenance checklists
  - Confirm UPS is properly installed with appropriate breaker
  - Clean or replace air filters
  - Check and repair all battery connections as required
  - Test individual cells for voltage and impedance
  - Clean, inspect and test as necessary the operation of inverters, transformers, switches and other components
  - Perform a thermal scan using IR thermographs to check final condition of the UPS and associated circuitry
  - Prepare a report on UPS condition with recommendations as necessary
- Perform mechanical maintenance
- Check accuracy of monitoring system readouts and alarm set points
- Document routine service or callouts

## Turnkey Installation

Alpha's complete power system integration and turnkey installation services include right-of-way and easement procurement, site preparation, equipment installation, utility hookup coordination, system turn-up and system testing.

- Performs all site negotiations
- Coordinate utilities and construction permitting process
- Correct installation and maintenance of Headend, DC Plant and Outside Plant power solutions
- Customers benefit from Alpha's professional project management and quality control

## Turn-Up and Test Services

Turn-up and test services for Headend, DC Plant and Outside Plant installations performed by Alpha specialists represent a significant first step in ensuring long-term system reliability. Services include verification of proper installation, completion of Alpha start-up procedures and system testing.

- Turn-up and test completed by Alpha technicians
- Certified installation inspections
- Coordinated product and service ordering, tracking and billing
- Extended warranty availability

## Plant Hardening

With the necessary manpower and logistics to extend the life of your power networks, Alpha Technologies Services offers multiple plant hardening options:

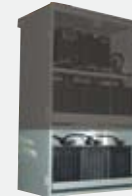
Battery Expansion Cabinet installation for longer runtimes to support quad play applications and critical enterprise equipment  
Generator Expansion Module for rapid generator deployment and prolonged power outages



Top mount battery expansion cabinet for UPE-3/6 enclosures



Generator expansion module for UPE and PWE enclosures



Under mount battery expansion cabinet for PWE-3/6 enclosures

## Construction Services

With a national network of contractors and project managers, Alpha Technologies Services can provide turnkey solutions for outside plant, headend, telecommunications, industrial and renewable energy applications.



Complete renewable energy system installations including design, engineering and construction



Alpha building systems from concept to site activation

# Turnkey Installation Services

## Off-grid, grid-tied solar power

- Complete system engineering, installation and system commissioning
- Service and support before, during and after system commissioning
- Liaison with utility companies and local municipalities throughout the project



16.8kW Alpha Elevated Racking Structure

### Elevated Racking Structure in Bordentown, NJ

#### Largest continuous elevated racking structure in the United States

This 1MW DC grid-paralleled Solar System in Bordentown, NJ is the largest continuous elevated racking structure in the United States. The system will provide clean and low-cost power for onsite business operations for the next 20 to 25 years. As part of the Renewable Energy Portfolio available only in New Jersey, our customer was able to lower the system cost through the sale of environmental attributes (Solar Renewable Energy Credits).

This 1MW grid-tied solar power system includes 5,880 photovoltaic panels spanning a total area of 140,000 square feet. The panels are tied in to one single electric utility meter via 10 separate inverters; this ensures that if a single array needs troubleshooting, 90% of the system would still be producing electricity. The system will generate more than 1,130,000 kilowatt hours per year, which is roughly the amount required to power 128 homes. The resulting CO<sub>2</sub> offset of 2,030,000 lbs (about 923 tons) is equivalent to eliminating the annual emissions from 169 cars.



### Off-grid Solar System in Hinsdale, CO

#### Remote electrical system in Southwestern Colorado

This remote electrical system was built and installed in Southwestern Colorado as part of a project to improve emergency communications. The site is located at 9700 feet elevation up a narrow and steep ATV path. An 800mHz repeater radio is the primary load on-site with additional DC and AC power provided for local emergency fire, rescue and police communication.

The combined load of all the communications systems is just over 50 kilowatt hours per day – roughly equivalent to the electrical demands of two average grid-connected homes. Not surprisingly, the mandate for this electrical system was "extreme reliability" so two sources of power generation are available. A 13.86kW PV array is the primary source of energy, backed up by a 20kW diesel generator.

The solar power system on this site is intended to meet 86% of the power requirements, with the remainder of the power coming from the 20kW diesel generator. The 240Vac output of the generator is converted into 48Vdc by a bank of Argus Cordex™ 3.6kW rectifiers. The hybrid nature of this system – PV assisted by a generator – maximizes battery life and minimizes the risk of load loss.



### Grid-tied Solar System in Phoenix, AZ

#### 153kW grid-tied solar power system

As part of a broader effort to reduce their power demand and energy expenses, Cox Communications contacted Alpha Energy to design and implement a solar power system at its Phoenix, Ariz. headquarters. Alpha Energy worked with a regional prefabricated parking structure installer and electrical contractor to engineer and build a series of turnkey Elevated Racking Structures

The 153kW grid-tied solar power system includes 900 photovoltaic panels spread across six new racking structures, enough to accommodate 75 parking spaces. The system will generate more than 240,000 kilowatt hours per year, which is roughly the amount required to power 16 homes. The resulting CO<sub>2</sub> offset of 392,081 lbs (178.2 tons) is equivalent to preventing the emissions from 33 cars.

As an added benefit the racking structures provide parking protection from the elements. These structures also make the solar modules visible from the street to help demonstrate Cox Communications' commitment to renewable energy.





transformer  
module

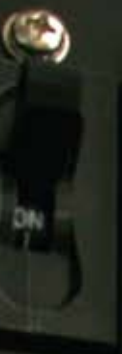
UNLATCH RIBBON CABLE RETAINER  
BEFORE FULLY REMOVING MODULE

inverter  
module

OUTPUT

ALARM

ESC



ON

BATTERY  
BREAKER

BATTERY



TEMP  
PROBE

alpha

RT MAC: 000000000000

RT MAC: 000000000000

A/B



# Cable Power Supplies

*Alpha has provided specialized uninterruptible power supplies (UPS) for more than 30 years. With impressive backup power capabilities, integrated generators, dual power grid switching and enhanced battery thermal management, an Alpha CableUPS® ensures improvement in the overall efficiency and reliability of a broadband network.*

## ➤ XM2-HP

Alpha's XM2-HP CableUPS® is the answer to the higher energy costs associated with running today's cable networks. The XM2-HP power supply features a high efficiency transformer with lower power consumption and lower life cycle costs. This "green" power supply can greatly reduce the carbon footprint of the entire cable plant by running more efficiently 24/7. Additional features include an enhanced Smart Display with improved menus and a dedicated Communications menu with DOCSIS® parameters. The XM2-HP is available in three convenient power ratings for load matching to operate at optimal efficiency.

## ➤ XM2

Alpha's XM2 CableUPS is the industry's leading power technology. A variety of power ratings make it an ideal match for network architectures worldwide. Advanced product design features include hot-swappable modular inverter and smart display. Optional independent dual outputs and N+1 redundant capability provide additional protection and enhanced system reliability. AC or DC generator compatibility, flexible system control and advanced status monitoring options support easy migration to clustered or centralized powering.

## ➤ GMX

Alpha's GMX is a cost-effective CableUPS designed for cable operators who need a reliable, basic uninterruptible power supply. Features of the GMX include an embedded status monitoring card slot, smart display, terminal block output connections, 63 and 87V output taps, external battery temperature probe, built-in chassis handle and removable MOV's.

## ➤ XM2-300HP

The XM2-300HP is the ideal CableUPS powering solution for rapidly expanding cable broadband networks and services. When used in applications requiring less power than traditional outside plant powering, service operators will experience increased efficiency and reduced operating costs. This low power system features a much smaller footprint and is engineered for use in multiple dwelling units (MDU), business parks and node segmentations, as well as Fiber Deep, N+0 and N+1 plant extensions. Rated at 300 Watts, with a 12V inverter, this power supply features an XM2 smart display and a DOCSIS-based status monitoring card.

## ➤ APX

Alpha's APX is designed for communication networks that require compact, non-standby power supplies. The APX's ferroresonant design provides fully regulated output voltage, surge and short-circuit protection. The APX can be easily upgraded by adding modular plug-in options such as a Lightning Arrestor, Time Delay Relay, Ammeter, Status Indicator LED or AmpClamp™ Surge Suppressor.

## ➤ APP

The APP is a portable non-standby power supply used to provide conditioned AC power to the load when the main power supply is being serviced. Used in conjunction with the "Alternate" connector and the "ALT/ON" switch located on the enclosure's service power inserter, power can be transferred from the main power module to the APP without interrupting the connected load.

# XM2-HP

## CableUPS® Power Supply

- New high efficiency transformer
- New communications menu
- 6, 15 and 22A models available
- Next generation microprocessor
- Backwards compatible with XM Series 2 CableUPS
- Integrated and External DOCSIS® Transponders
- Integrated and External Proprietary Transponders



XM2-HP

### XM2-HP

Models:	XM2-906HP	XM2-915HP	XM2-922HP
Electrical			
Input Voltage (Vac):	120 / 240	120 / 240	200 / 240
Input Voltage Tolerance:	-30% to +20%	±15%	±15%
Input Frequency:	60Hz	60Hz	60Hz
Frequency Tolerance:	±3%	±3%	±3%
Output Voltage (Vac):	63 / 87	63 / 75 / 87	63 / 75 / 87
Output Current (A):	8 / 6	22.5 / 18 / 15	22.5
Max Output Power (VA):	525	1350	2025
Waveform:	Quasi-square wave		
Voltage Regulation:	±5%		
Output Frequency Stability:	±0.05% inverter mode, ±1% normal mode		
Short Circuit Current:	150% of maximum current rating		
Transformer Efficiency:	93% typical line mode, 87% typical standby mode		
Transfer Characteristics:	Uninterrupted output		
Battery Voltage (Vdc):	36	36	48
Battery Charger			
Temperature Compensation:	Programmable (0 to 5mV/Cell/°C)		
Charger Current:	10A at 80% load and nominal input (bulk charge mode)		
Three Stage:	Bulk, accept, float		
Mechanical			
Status Display:	Smart Display 2 x 20 LCD with backlight		
Dimensions H x W x D (in/mm):	8.8 x 15 x 13 / 222 x 381 x 330		
Approx. Weight (lb/kg):	60 / 27	70 / 32	92 / 42
Finish:	Black, epoxy powdercoat		
Environment			
Operating Temperature:	-40 to 55°C / -40 to 131°F		
Humidity:	0 to 95% non-condensing		
Agency Compliance:	FCC Part 15 Class A, UL1778, CSA 22.2 No. 107.1-M95		
Smart Display Features:	Output current, Input frequency, Battery voltage, Battery temperature, Output VA, Standby time, DOCSIS® parameters, Built-in diagnostics, Output power (W), Output voltage, % load, Input voltage, Charger current, Number of events		
Note: General Specifications reference most commonly used models. For model-specific information, consult product manual. Other voltages and configurations may be available. For more information, contact your sales representative.			

### Optional Features

**PIM/N+1 Protective Interface Module:** Provides two programmable outputs from a single XM Series 2 power supply. The PIM protects system components and provides isolation between distribution legs by shutting down the individual load during over-current conditions. The PIM has a user-programmable over-current threshold, as well as a programmable over-current tolerance period to specify the time in seconds (1 to 10) that an over-current condition is allowed on the XM Series 2 output before the individual output channel is shut down. A user programmable retry limit allows the user to select how many times (1 to 40) the PIM will attempt to reconnect an output that was shut down for an over-current condition. The PIM also provides redundant power supply capability (N+1) for multiple power supply configurations.



# XM2

## CableUPS® Power Supply

- Proven CableUPS® uninterruptible power supply
- Programmable LCD Smart Display
- 6, 15 and 22A models available
- Modular design with hot-swappable inverter
- Programmable, temperature-compensated battery charger
- Integrated and External DOCSIS® Transponders
- Integrated and External Proprietary Transponders



XM2

### XM2

Models:	XM2-910	XM2-915	XM2-915 HV	XM2-1350-48	XM2-922	XM2-922 HV
Electrical						
Input Voltage (Vac):	120 / 240	120 / 240	120 / 240	120 / 240	200 / 240	200 / 240
Input Voltage Tolerance:	±15%	±15%	-25% to +15%	±15%	±15%	-25% to +15%
Input Frequency:	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz
Frequency Tolerance:	±3%	±3%	±3%	±3%	±3%	±3%
Output Voltage (Vac):	63 / 75 / 87	63 / 75 / 87	63 / 75 / 89	63 / 75 / 87	63 / 75 / 87	63 / 75 / 89
Output Current (A):	10	22.5 / 18 / 15	22.5 / 18 / 15	22.5 / 18 / 15	22.5	22.2
Max Output Power (VA):	900	1350	1350	1350	2025	2025
Waveform:	Quasi-square wave					
Voltage Regulation:	±5%					
Output Frequency Stability:	±0.05% inverter mode, ±1% normal mode					
Short Circuit Current:	150% of maximum current rating					
Transformer Efficiency:	90% typical line mode, 84% typical standby mode					
Transfer Characteristics:	Uninterrupted output					
Battery Voltage (Vdc):	36	36	36	48	48	48
Battery Charger						
Temperature Compensation:	Programmable (0 to 5mV/Cell/°C)					
Charger Current:	10A at 80% load and nominal input (bulk charge mode)					
Three Stage:	Bulk, accept, float					
Mechanical						
Status Display:	Smart Display 2 x 20 LCD with backlight					
Dimensions H x W x D (in/mm):	8.8 x 15 x 13 / 222 x 381 x 330					
Approx. Weight (lb/kg):	62 / 28	70 / 32	64 / 29	70 / 32	92 / 42	92 / 42
Finish:	Black, epoxy powdercoat					
Environment						
Operating Temperature:	-40 to 55°C / -40 to 131°F					
Humidity:	0 to 95% non-condensing					
Agency Compliance:	FCC Part 15 Class A, UL1778, CSA 22.2 No. 107.1-M95					
Smart Display Features:	Output current, Input frequency, Battery voltage, Battery temperature, Output VA, Standby time, Built-in diagnostics, Output power (W), Output voltage, % load, Input voltage, Charger current					
Note: General Specifications reference most commonly used models. For model-specific information, consult product manual. Other voltages and configurations may be available. For more information, contact your sales representative.						

### Optional Features

**PIM/N+1 Protective Interface Module:** Provides two programmable outputs from a single XM Series 2 power supply. The PIM protects system components and provides isolation between distribution legs by shutting down the individual load during over-current conditions. The PIM has a user-programmable over-current threshold, as well as a programmable over-current tolerance period to specify the time in seconds (1 to 10) that an over-current condition is allowed on the XM Series 2 output before the individual output channel is shut down. A user programmable retry limit allows the user to select how many times (1 to 40) the PIM will attempt to reconnect an output that was shut down for an over-current condition. The PIM also provides redundant power supply capability (N+1) for multiple power supply configurations.

# GMX

CableUPS® Power Supply

- Line Interactive Ferro Technology (LIFT)
- Wide input voltage range of  $\pm 30\%$
- Compact packaging with light weight ferro
- Field programmable flash memory
- Integrated DOCSIS® Embedded Transponder
- Built-in battery circuit breaker
- IEC-style line cord



## GMX

Models:	GMX-915	GMX-915P
<b>Electrical</b>		
Input Voltage (Vac):	120	240
Input Voltage Tolerance:	$\pm 30\%$ @ 115V (80 to 150V <sub>RMS</sub> )	$\pm 30\%$ @ 225V (158 to 292V <sub>RMS</sub> )
Line Return:	$\pm 25\%$	$\pm 25\%$
Nominal Input Current <sup>1</sup> :	13A	7A
Input Frequency:	60Hz	60Hz
Frequency Tolerance:	$\pm 3\text{Hz}$	$\pm 3\text{Hz}$
DC Voltage (Vdc):	36	36
Low DC Voltage Cutout:	1.75V/Cell	1.75V/Cell
Output Voltage (Vac):	63 / 87 (Field selectable)	63 / 87 (Field selectable)
Output Regulation, 87V Tap <sup>2</sup> :	$\pm 3\%$	$\pm 3\%$
Output Regulation, 63V Tap <sup>2</sup> :	$\pm 4\%$	$\pm 4\%$
Output Current:	15A	15A
Output Frequency Stability:	60Hz, $\pm 1\text{Hz}$ (Inverter operation)	60Hz, $\pm 1\text{Hz}$ (Inverter operation)
Waveform:	Quasi-square wave	Quasi-square wave
<b>Battery Charger</b>		
Charge Current <sup>3</sup> :	10A	10A
Temperature Compensation:	-5mV/Cell/°C (Programmable)	-5mV/Cell/°C (Programmable)
Constant Current Operation:	High Rate Charge to 90% Capacity	High Rate Charge to 90% Capacity
Constant Voltage Operation:	2.4V/Cell (Typ. 7hrs) @ 25°C / 77°F	2.4V/Cell (Typ. 7hrs) @ 25°C / 77°F
<b>Mechanical</b>		
Dimensions H x W x D (in/mm):	7.8 x 18.3 x 11.4 / 198 x 465 x 290	7.8 x 18.3 x 11.4 / 198 x 465 x 290
Weight (lb/kg):	60 / 27.5	60 / 27.5
Front Panel Display (LCD):	2 x 20 Character LCD	2 x 20 Character LCD
Front Panel Indicators (LED):	Output status and alarm	Output status and alarm
Finish:	Black, epoxy powdercoat	Black, epoxy powdercoat
<b>Environment</b>		
Operating Temperature:	-40 to 55°C / -40 to 131°F	-40 to 55°C / -40 to 131°F
Humidity:	0 to 95% non-condensing	0 to 95% non-condensing
Elevation:	0 to 3000m / 0 to 10000ft above sea level	0 to 3000m / 0 to 10000ft above sea level
<b>Communication</b>		
Status Monitoring <sup>4</sup> :	Optional DSM and ESM	Optional DSM and ESM
Agency Compliance:	UL 1778/CSA C22.2, No. 107.1	UL 1778/CSA C22.2, No. 107.1
Emissions:	CISPR 22, Class A	CISPR 22, Class A
<small>Notes: <sup>1</sup> Batteries fully charged <sup>2</sup> Output regulation at nominal input frequency. Frequency variations will proportionally affect the output voltage (i.e., a 1% reduction in frequency will result in approximately a 1% drop in output voltage) <sup>3</sup> Varies with input line voltage and output load <sup>4</sup> Status monitoring and embedded transponders are optional</small>		

# XM2-300HP Power Supply

## High Efficiency CableUPS®

- High efficiency 300W power supply
- XM2 Programmable LCD Smart Display
- New predictive preventive maintenance features
- Small footprint and lightweight
- Ideal for RFoG, MDU and N+0 applications
- Integrated DOCSIS® status monitoring



XM2-300HP

### XM2-300HP

Model:	XM2-300HP
<b>Electrical</b>	
Input Voltage (Vac):	120
Input Voltage Tolerance:	-15% to +10%
Input Frequency:	60Hz
Frequency:	±3%
Output Voltage (Vac):	63/87
Output Current (A):	4.8/3.5
Max Output Power (VA):	300
Waveform:	Sine wave
Voltage Regulation:	±5%
Output Frequency Stability:	±0.05% inverter mode, ±1% normal mode
Short Circuit Current:	150% for ten seconds
Transformer Efficiency:	94% typical line mode, 88% typical standby mode
Battery Voltage (Vdc):	12
<b>Battery Charger</b>	
Temperature Compensation:	Programmable (0 to 5mV/Cell/°C)
Charger Current:	6A minimum - 10A maximum
Three Stage:	Bulk/Accept/Float
<b>Mechanical</b>	
Status Display:	Smart display 2x20 LCD with backlight
Dimensions H x W x D (in/mm):	8.5 x 9.0 x 8.0 / 216 x 229 x 203
Approx. Weight (lb/kg):	22/10
Finish:	Black, epoxy powdercoat
<b>Environment</b>	
Operating Temperature:	-40 to 55°C / -40 to 131°F
Humidity:	0 to 95% non-condensing
Agency Compliance:	FCC Part 15 Class A, UL / CSA 1778
Smart Display Features:	Output current, Input frequency, Battery voltage, Battery temperature, Output VA, Standby time, Built-in diagnostics, Output power (W), Output voltage, % load, Input voltage, Charger current
<b>Advanced Diagnostics</b>	
Advanced Analytics:	<ul style="list-style-type: none"> <li>Onboard battery algorithm for predictive service required</li> <li>Onboard inverter algorithm to trend inverter performance</li> </ul>
User Inputs:	<ul style="list-style-type: none"> <li>Power supply install and battery manufacturing dates</li> <li>Power Supply priority level</li> <li>IP Server address</li> <li>Siemens values during battery preventive maintenance cycles</li> </ul>



# APX

## Non-Standby Power Supply

- Complete line conditioning
- Modular transformer design
- Flexible mounting options
- Current limited output and short circuit protection



APX Series

### APX Series

Models:	Input Voltage (Vac)	Input Frequency (Hz)	Output Voltage (Vac)	Output Current (A)	Max. Output Power (VA)	Input Protection (breaker)	Output Protection (fuse)	Weight (lb/kg)
APX 6008:	120	60	63	8	480	8A	10A	21 / 9.5
APX 6014:	120	60	63	14	840	12A	15A	30 / 13.6
APX 9015-120:	120	60	63/75/87	15	1350	12A	20A	47.5 / 21.6
APX 9015-240:	240	60	63/75/87	15	1350	12A	20A	47.5 / 21.6
APX 9015-120 HV:	120	60	63/75/89	15	1350	12A	20A	51 / 23
APX 9015-240 HV:	240	60	63/75/89	15	1350	12A	20A	51 / 23
APX 6008 RM:	120	60	63	8	480	8A	10A	22 / 10
APX 6014 RM:	120	60	63	14	840	12A	15A	31 / 14

Note: Other voltages and configurations may be available. For more information, contact your local Alpha sales representative.

Input	
Power Factor:	>0.90 at full load
Voltage Tolerance:	±15%
Voltage (APX 9015 HV):	-25 to 15%
Frequency:	±3%
Output	
Waveform:	Quasi-square wave
Regulation:	±5%
Efficiency:	90% or better
Mechanical	
Dimensions H x W x D	
APX 6008, 6014 (in/mm):	11.75 x 7.5 x 10.5 / 298 x 190 x 267
APX 9015 (in/mm):	15.5 x 8.5 x 11 / 394 x 216 x 279
Finish:	Durable powdercoat
Enclosure Material:	Aluminum
Environment	
Operating Temperature:	-40 to 55°C / -40 to 131°F
Agency Compliance:	UL1012/CSA C22.2 No. 107.1-M95
Optional Features	
SIL-C:	Long life LED pilot light
LA-M:	Plug-In lightning arrestor (120V)
AMM-C:	Easy reading panel ammeter
TDR-M:	Time delay relay (10 to 60sec variable)
ACAT-3P:	Plug-In Amp Clamp™
GLK:	Enclosure security lock (PM)

Mounting Options
<b>Pole Mount (PM):</b> Built of durable, weather-resistant, powdercoated aluminum to withstand the harshest environments. This enclosure also includes brackets that provide for easy bolted, or banded Pole Mounting.
<b>Wall Mount (WM):</b> Allows the module to be mounted on a flat, vertical surface.
<b>Shelf Mount (SM):</b> Allows the module to be mounted on flat, horizontal surfaces such as the PWE or UPE enclosures. An extended input power cable is also included.
<b>Pedestal Mount (PED):</b> Ideal for ground mount applications, and provides weather-resistant, steel construction. The APX PED is available in either concrete or soil mount versions (please specify at time of order).
<b>Rack Mount (RM):</b> Ideal for mounting the power supply in a standard 19" rack.



APX - Cover removed

# APP

## Service Power Supply

- Portable service power supply
- Time proven ferroresonant technology
- Selectable input and output voltages
- 15A and 22A versions available



APP9022S

### APP

Models:	APP9015S	APP9022S
Input Voltage (Vac):	120/240 $\pm$ 15%	120/240 $\pm$ 15%
Input Current (A):	12	16/12 max.
Input Frequency:	60Hz	60Hz
Output Voltage (Vac):	60/75/87 $\pm$ 5%	60/75/87 $\pm$ 5%
Output Current (A):	15	17 (22 at 240Vac Input)
Output Power (VA) (Continuous):	1350	1350/1650/2000
Output Current Limit:	150% of output rating	150% of output rating
Efficiency:	90% typical @ rated load	90% typical @ rated load
Agency Compliance:	—	CSA
Finish:	Durable powdercoat	Durable powdercoat
Operating Temperature:	-40 to 50°C / -40 to 122°F	-40 to 50°C / -40 to 122°F
Dimensions H x W x D (in/mm):	9 x 9.5 x 13.75 / 229 x 241 x 349	9 x 9.5 x 14.75 / 229 x 241 x 375
Weight (lb/kg):	47 / 21	60 / 27

#### APP Kits:

##### APP-9015S Kit Includes:

874-726-20 — Line Cord Assy, 120Vac, 5-20P, APP-9015S  
 874-727-20 — Line Cord Assy, 240Vac, 6-15P, APP-9015S  
 874-728-20 — Output Cable Assy, Jones Connector, APP-9015S  
 874-712-20 — WR KT, ADPTR, SPS JONES to SPI 25XM

##### APP-9022S Kit Includes:

874-935-20 — Line Cord Assy, 120Vac, 5-20P, APP-9022S  
 874-935-21 — Line Cord Assy, 240Vac, 6-15P, APP-9022S

All output cables for the APP-9022S are to be ordered as separate line items. One standard output cable kit (745-223-20) is included in the price of the APP-9022S. Additional output cables or 30ft cable kits can be ordered (additional cost) as needed.

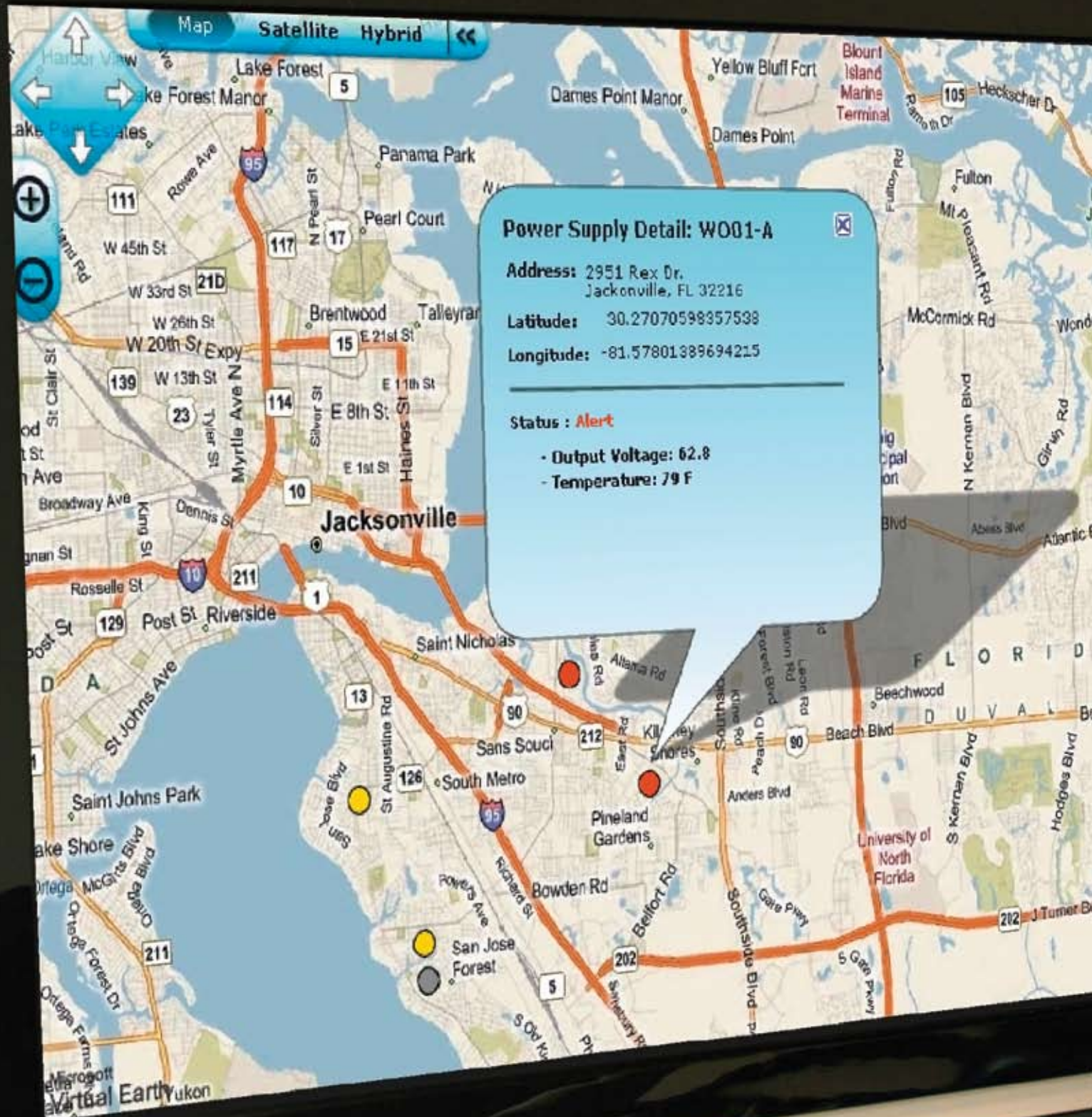
##### 745-223-20 Kit Includes:

874-949-20 — Y-Cables, 25A Connectors, 6', APP-9022S  
 874-949-21 — Y-Cables, Jones, 6', APP-9022S  
 875-173-20 — Lectro Adapter, Lectro to APP-9022S

#### Cables:

874-726-20 (5-20 plug) Power cord with 5-20P plug (120Vac)	874-727-20 (6-15 plug) Power cord with 6-15P plug (240Vac)	874-728-20 Output cable, single Jones	875-173-20 25A Lectro Adapter	874-935-20 (5-20 plug) Power cord with 5-50P plug (120Vac)	874-935-21 (6-15 plug) Power cord with 6-15P plug (240Vac)
874-935-22 Optional 10-Ft cord with 30A connector and Twist Lock Plug (125Vac)	874-949-20 Y cable with 25A connectors	874-949-21 Y cable with Jones connectors	874-949-32 30-Ft cable	874-949-33 Y cable adapter for 25A connector	874-949-34 Y cable adaptor for Jones connector





#### Power Supply Detail: W001-A

Address: 2951 Rex Dr.  
Jacksonville, FL 32216

Latitude: 30.27070598357538

Longitude: -81.57801389694215

Status: **Alert**

- Output Voltage: 62.8
- Temperature: 79 F



# Status Monitoring

Monitoring, measuring and managing power supplies, batteries and generators are no easy tasks. However, in order to maintain customer satisfaction, reduce operating costs and meet regulatory requirements, cable service providers need specific information from their systems. Alpha's status monitoring solutions use state-of-the-art communications technology to transmit critical network performance data to the headend or network management center. This allows cable providers to be proactive and take corrective action before serious problems occur. Whether you are extending the life of your network backup power through battery balancing, managing QoS for VoIP services, or monitoring for trouble areas during an AC power outage, the AlphaNet™ series of products provides the tools to manage today's network power requirements with the ability to upgrade for tomorrow's needs.

## ➤ AlphaNet DSM

Alpha's AlphaNet family of networking products including the DOCSIS® Status Monitor (DSM) broadband power communication card enables Alpha's XM2-HP, XM2, XM2-300HP and GMX CableUPS® to connect directly to an HFC network through an embedded DOCSIS cable modem.

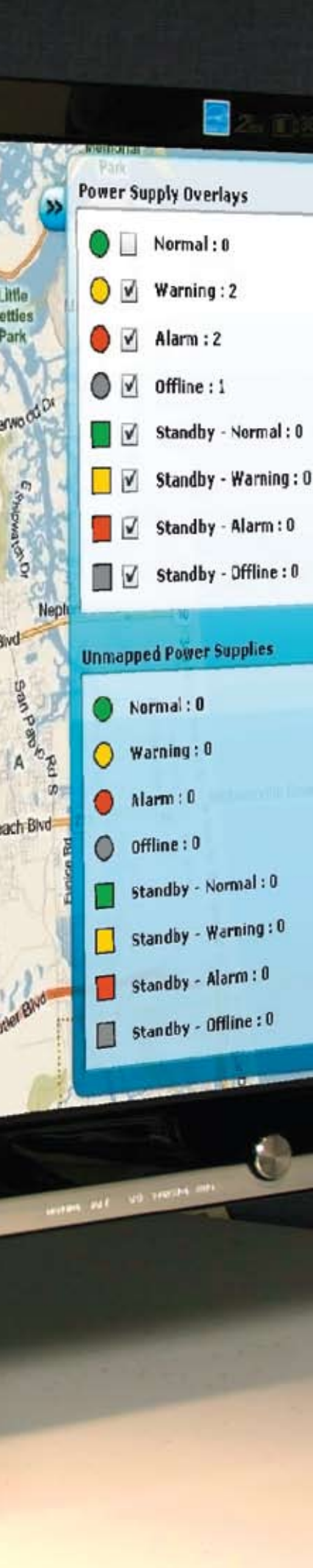
Through a Simple Network Management Protocol (SNMP) interface, standard MIBs are used for quick, efficient network status and diagnostics. A WEB interface enables any authorized personnel direct access to powerful, advanced diagnostics using a common web browser. No proprietary software is required. A single DSM installed in an Alpha CableUPS supports communications and system control for multiple Alpha power supplies and an AlphaGen™ generator system.

## ➤ AlphaNet Family of Embedded and External Transponders

The AlphaNet family of products includes monitoring solutions for any of your broadband cable network management needs. Let us help you select a solution that fits your requirements.

## ➤ Continuity DOCSIS Power Supply Monitoring

Continuity-SPS (Standby Power Supply) is a flexible standby power supply status monitoring solution. Based on HMS and DOCSIS standards, Continuity supports any standards-based transponder, providing cable operators with a centralized, feature-rich, web-enabled tool to monitor all the standby power supplies in their network.



# AlphaNet™ DSM3

## DOCSIS® Status Monitor



AlphaNet DSM3

- Embedded network management for Alpha broadband power supplies
- Standard network interface including SNMP, Web access and ANSI/SCTE HMS MIBs
- Battery and power supply advanced diagnostics reduces truck rolls and overall operating expense of powering network
- Optional VoIP testing features

### AlphaNet DSM

Specifications	
Power Supply Models Supported:	XM2-HP, XM2-300HP, XM2, GMX
Battery Monitoring:	Up to four strings of 36V or 48V batteries
Power System Management:	Up to five power supplies and an AlphaGen generator are managed from a single DSM3. Coordinated battery charging, system test and aggregated alarm reporting are each managed by the DSM3
Management Protocol:	Standard ANSI/SCTE HMS MIBs support basic power supply monitoring. Advanced diagnostics with battery and power module analytics available via secure SNMP
Advanced Diagnostics <sup>1</sup>	
Intelligent Power Supply Interface:	Power supply user interface displays advanced diagnostics including: DOCSIS modem upstream and downstream RF levels, IP address assigned by network DHCP server, MAC address and firmware levels, individual battery voltages to verify correct wire harness installation.
Battery State of Health:	Power supply internal analytic diagnostics report when batteries should be serviced. Reported Status: Batteries OK, Battery Thermal Warning – PM Visit Recommended, Battery Conductance Warning - PM Visit Recommended, Battery Thermal Alarm – Service Required, Battery Conductance Alarm - Service Required
Power Inverter State of Health:	Power supply internal diagnostics report if the power inverter requires service. Reported Values: Inverter OK, Replace Inverter.
Battery Conductance:	Individual battery conductance measurements (Mho's) from portable meters are using the power supply or DSM craft interface.
Battery Thermal Variance:	Temperature delta between enclosure ambient and battery (-) terminal is automatically logged.
Hardware	
RF Cable Interface:	F-connector, female, 75 Ohm, connector angle accommodates coax bend radius when installed in some enclosures
Local Interface:	RJ-45, Ethernet, multi-mode operation
LED Indicators:	Ready/Alarm, Upstream Registration, Downstream Lock, AlphaBus, RF Level, Link, CPE Traffic, Battery Harness Correct
I/O Control:	4-pin Molex: Digital Input, Digital Output, 5V, Common
AlphaBus:	RJ-11 offset tab: Multi-power supply and AlphaGen communications
Battery Monitoring:	8-pin Molex battery string A/B, 8-pin Molex battery string C/D
Tamper:	NO or NC, software configurable, reads enclosure door magnetic switch
<sup>1</sup> Advanced diagnostics are available through Alpha Certified network monitoring systems	
Environment	
Operating Temperature:	-40 to 65°C / -40 to 149°F
Storage Temperature:	-40 to 85°C / -40 to 185°F
Humidity:	10 to 90% non-condensing
Regulatory Compliance:	FCC Part 15 Class A EN 50083-2:2006 EMC Requirements for CATV Equipment EN 62040-2:2006 Uninterruptible Power Supply EMC Requirements, Category C2 Surge: IEEE 587, Category B3 RoHS: Directive 2002/95/EC

Network Communications	
DOCSIS (RF) Port Protocols:	IP, UDP, TCP, DHCP, TFTP, SNMPv1, SNMPv2c, HTTP
Ethernet Port:	<b>Local Mode:</b> HTTP web interface for local craft diagnosis. <b>CPE Mode:</b> DOCSIS Cable modem Ethernet CPE functionality
MIBs:	Power Supply (ANSI/SCTE 38-4) Other SCTE HMS MIBs as defines by the SCTE for power supply and generator status monitoring Alpha proprietary advanced UPS diagnostics
Power Supply Monitored Parameters	
Major Alarm:	Aggregate alarm consisting of: test fail, battery fail, line isolation alarm, output overload, inverter, over-temperature, N+1 active, fuse fail
Minor Alarm:	Aggregate alarm consisting of: temperature probe error, AC line loss, N+1 error
Input Voltage:	Reported from power supply V(in) measurement
Output Voltage:	Reported from power supply V(out) measurement
Output Current 1-4:	0-25A standard on port 1. Ports 2-4 require power supply option.
Output Power:	Calculated, reported in AC Watts
UPS Status:	AC Line, Standby, Test in process, Test alarm
Enclosure Door:	Open or Closed
Battery Voltage:	Individual battery voltage, up to four strings of 3 or 4 batteries (maximum 16 batteries), +/- 100mV per battery
Battery Temperature:	Reported from power supply battery Remote Temperature Sensor (RTS)
Remote Test Control:	Start / Stop power supply test cycle
Generator Monitored Parameters	
Status:	Generator Off, Running, Alarm
Generator Alarm:	Aggregate alarm consisting of: low oil pressure, engine over-temp, engine over-speed, crank limit, over voltage, low fuel, water intrusion, pad shear, gas hazard, test fail
Gas Hazard:	OK, Alarm
Water Intrusion:	OK, Alarm
Pad Shear:	OK, Alarm
Enclosure Door:	Closed, Open
Ignition Battery Voltage:	+/- 100mV
Enclosure Temperature:	+/- 2°C
Low Fuel:	OK, Alarm
Remote Test Control:	Start / Stop generator test cycle
Cable Modem:	
Compliance:	DOCSIS 1.1 and 2.0
Transmit Frequency Range:	5 to 42 Mhz
Receive Center Frequency Range:	91 to 857 Mhz
Output Power Range:	8 to 58 dBmV
Input Signal Range:	-15 dBmV to 15 dBmV
Channel Bandwidth:	6 Mhz

# AlphaNet™ IDH3

## DOCSIS® Status Monitor

- Alpha XM2-HP and XM2 embedded status monitoring
- Standard network interface including SNMP, Web access and ANSI/SCTE HMS MIBs
- Monitors one or two 36V or 48V battery strings
- Used with EDSM interface card
- Optional VoIP testing features

### AlphaNet IDH3

Specifications	
<b>Power Supply Models Supported:</b>	XM2-HP, XM2
<b>Battery Monitoring:</b>	Up to two strings of 36V or 48V batteries
<b>Monitoring Protocol:</b>	SNMP v1
<b>Devices Monitored:</b>	Power Supply, Batteries and Generator (compatible with ANSI/SCTE 25-3 2002, formerly HMS 022)
<b>Management Protocol:</b>	Standard ANSI/SCTE HMS MIBs support basic power supply monitoring.
Hardware	
<b>RF Cable Interface:</b>	F-connector, female, 75 Ohm
<b>Local Interface:</b>	RJ-12, RS-232, 19.2kb,N,8,1 Requires serial port adapter and PC with terminal emulation software (Hyper-Terminal recommended)
<b>LED Indicators:</b>	Transponder Ready/RF Link Established Transponder/CMTS Communications Power Supply/Transponder Communication
<b>I/O Signals:</b>	Battery, tamper, and AlphaBus interfaces located on EDSM interface card
Environment	
<b>Operating Temperature:</b>	-40 to 65°C / -40 to 149°F
<b>Storage Temperature:</b>	-40 to 85°C / -40 to 185°F
<b>Humidity:</b>	10 to 90% non-condensing
<b>Regulatory Compliance:</b>	EN50022 Class A and FCC Part 15 Class A (Installed in power supply enclosure system)
Cable Modem:	
<b>Compliance:</b>	DOCSIS 1.1 and 2.0
<b>Transmit Frequency Range:</b>	5 to 42 Mhz
<b>Receive Center Frequency Range:</b>	91 to 857 Mhz
<b>Output Power Range:</b>	8 to 58 dBmV
<b>Input Signal Range:</b>	-15 dBmV to 15 dBmV
<b>Channel Bandwidth:</b>	6 Mhz



AlphaNet IDH3

Power Supply Monitored Parameters	
<b>Major Alarm:</b>	Aggregate Alarm consisting of: test fail, battery fail, line isolation alarm, output overload, inverter over temperature, N+1 active, fuse fail
<b>Minor Alarm:</b>	Aggregate Alarm consisting of: temperature probe error, AC line loss, N+1 error
<b>Input Voltage:</b>	Reported from power supply V(in) measurement
<b>Output Voltage:</b>	Reported from power supply V(out) measurement
<b>Output Current 1-4:</b>	0-25A standard on port 1. Ports 2-4 require power supply option.
<b>Output Power:</b>	Calculated, reported in AC Watts
<b>UPS Status:</b>	AC line, Standby, Test in-process, Test alarm
<b>Enclosure Door:</b>	Open/Closed
<b>Battery Voltage:</b>	Up to 2 battery strings Individual battery voltages measured reported to ±100mv resolution
<b>Battery Temperature:</b>	Reported from power supply battery Remote Temperature Sensor (RTS)
<b>Remote Test Control:</b>	Start/Stop XM2 self test cycle
Generator Monitored Parameters	
<b>Status:</b>	Generator off, Running, Alarm
<b>Generator Alarm:</b>	Aggregate alarm consisting of: low oil pressure, engine over-temp, engine over-speed, crank limit, over voltage, low fuel, water intrusion, pad shear, gas hazard, test fail
<b>Gas Hazard:</b>	OK, Alarm
<b>Water Intrusion:</b>	OK, Alarm
<b>Pad Shear:</b>	OK, Alarm
<b>Enclosure Door:</b>	Open, Alarm
<b>Ignition Battery Voltage:</b>	+/- 100mV
<b>Enclosure Temperature:</b>	+/- 2°C
<b>Low Fuel:</b>	OK, Alarm
<b>Remote Test:</b>	Start and Stop control input

# AlphaNet™ EDH-A2

External DOCSIS® Transponder

- Add DOCSIS Status Monitoring capability to existing power supplies
- Supports standard networking interfaces including SNMP, Web access and ANSI/SCTE MIBs
- Multiple power supply models supported
- Embedded Web server for remote diagnostics



AlphaNet EDH-A2

## AlphaNet EDH-A2

Specifications	XP-EDH-A2					
Power Supplies Supported:	XM2-HP, XM2 (requires USM2 or USM2.5 card) XM (requires APM/USM), AM (requires RPM card) Lectro ZTT, ZTT+ and CPR					
DOCSIS Compatibility:	DOCSIS 1.1, 2.0					
Monitoring Protocol:	SNMPv1					
Devices Monitored:	Power supply, batteries <sup>1</sup>					
Notes: <sup>1</sup> Reported as per ANSI/SCTE 25-3 2002 (HMS-022)						
RF Transmit/Receive						
Tx Frequency Range:	5 to 42MHz					
Output Power:	8 to 55dBmV					
Channel Bandwidth:	6MHz					
Receive Center Freq Range:	91 to 857MHz (Standard, HRC, IRC channels)					
Input Level:	-15 to 15dBmV					
Monitored Parameters						
Power Supply Data						
Model:	XM2-HP/ XM2	XM	AM	ZTT Series	CPR	
Major Alarm:	■	■	■	■	■	
Minor Alarm:	■	■	■	■	■	
Input Line Voltage Present:	■	■ <sup>1</sup>	■ <sup>1</sup>	■ <sup>1</sup>	■	
Output Voltage:	■	■	■	■ <sup>1</sup>	■	
Battery Voltage:	■	■	■	■	■	
Output Current:	■	■	■	■ <sup>1</sup>	■	
Standby/AC Line Fail:	■	■	■	■	■	
Equipment/Test Fail:	■	■	■	-	-	
Enclosure Door Status:	■	■	■	■	■	
Remote Test Control:	■	■	■	■	■	
Notes: <sup>1</sup> Requires optional cable assembly						
Number of Battery Strings:	Up to two 36V or 48V strings					
Battery Data:	Individual battery voltages Battery compartment temperature					

Hardware	
Dimensions H x W x D (in/mm):	1.3 x 8.6 x 5.2 / 33 x 218 x 132
RF Cable Interface:	F-connector, female, 75Ohm
Local/Craft Interface:	USB
Environment	
Operating Temperature:	-40 to 65°C / -40 to 149°F
Humidity:	10 to 90% non-condensing
Emissions:	EN55022 Class A and FCC Part 15 Class A (Installed in power supply enclosure system)
Immunity:	Surge Test per Specification (IEEE C62.41-1991) ESD Protection: ±8kV air discharge, ±6kV contact discharge as per (IEC 61000-4-2)
Management	
NMS/EMS:	Standard SNMP Management Tools
HMS MIBs:	In addition to the standard DOCSIS MIBs, the transponder supports the following HMS MIBs: <ul style="list-style-type: none"><li>• SCTE 25-3 (HMS-022): - Interface</li><li>• SCTE 36 (HMS-050): - Root</li><li>• MIB SCTE 37 (HMS-072): - Tree</li><li>• MIB SCTE 38-1 (HMS-026): - Property</li><li>• MIB SCTE 38-2 (HMS-023): - Alarm MIB</li><li>• SCTE 38-3 (HMS-024): - Common</li><li>• MIB SCTE 38-4 (HMS-027): - Power Supply</li><li>• MIB SCTE 38-7 (HMS-050): - TIB MIB</li></ul>



# AlphaNet™ EDH4

## External DOCSIS® Transponder



AlphaNet EDH4

- Add DOCSIS Status Monitoring capability to existing power supplies
- Supports standard networking interfaces including SNMP, Web access and ANSI/SCTE MIBs
- Multiple power supply models supported
- Embedded Web server for remote diagnostics
- Optional VoIP testing features

### AlphaNet EDH4

Specifications				
Power Supplies Supported:	XM2-HP, XM2 (requires USM2 or USM2.5) XM (requires APM/USM) Lectro ZTT, ZTT+ AM (requires RPM card)			
DOCSIS Compatibility:	DOCSIS 1.1, 2.0			
Monitoring Protocol:	SNMP v1, v2, v3			
Devices Monitored:	Power supplies, batteries, generators <sup>1</sup>			
Notes: <sup>1</sup> Reported as per ANSI/SCTE 25-3 2002 (HMS-022)				
RF Transmit/Receive				
Tx Frequency Range:	5 to 42MHz			
Output Power:	8 to 58dBmV			
Channel Bandwidth:	6MHz			
Receive Center Freq Range:	91 to 857MHz (Standard, HRC, IRC channels)			
Input Level:	-15 to 15dBmV			
Monitored Parameters				
Power Supply Data				
Model:	XM2-HP / XM2	XM	AM	ZTT Series
Major Alarm:	■	■	■	■
Minor Alarm:	■	■	■	■
Input Line Voltage:	■	■ <sup>1</sup>	■ <sup>1</sup>	■ <sup>1</sup>
Output Voltage:	■	■	■	■ <sup>1</sup>
Battery Voltage:	■	■	■	■
Output Current:	■	■	■	■ <sup>1</sup>
Standby/AC Line Fail:	■	■	■	■
Equipment/Test Fail:	■	■	■	-
Enclosure Door Status:	■	■	■	■
Remote Test Control:	■	■	■	■
Notes: <sup>1</sup> Requires optional cable assembly				
Number of Battery Strings:	Up to four 36V or 48V strings			
Battery Data:	Individual battery voltages Battery compartment temperature			

Hardware	
Dimensions H x W x D (in/mm):	1.3 x 8.6 x 5.2 / 33 x 218 x 132
RF Cable Interface:	F-connector, female, 75Ohm impedance
Local/Craft Interface:	RJ45 Ethernet
Environment	
Operating Temperature:	-40 to 65°C / -40 to 149°F
Humidity:	10 to 90% non-condensing
Emissions:	EN55022 Class A and FCC Part 15 Class A (Installed in power supply enclosure system)
Warranty:	2 years
Management	
NMS/EMS:	Standard SNMP Management Tools
HMS MIBs:	In addition to the standard DOCSIS MIBs, the transponder supports the following HMS MIBs: <ul style="list-style-type: none"><li>• SCTE 25-3 (HMS-022): - Interface</li><li>• SCTE 36 (HMS-050): - Root</li><li>• MIB SCTE 37 (HMS-072): - Tree</li><li>• MIB SCTE 38-1 (HMS-026): - Property</li><li>• MIB SCTE 38-2 (HMS-023): - Alarm MIB</li><li>• SCTE 38-3 (HMS-024): - Common</li><li>• MIB SCTE 38-4 (HMS-027): - Power Supply</li><li>• MIB SCTE 38-6 (HMS-033): - Generator</li><li>• MIB SCTE 38-7 (HMS-050): - TIB MIB</li></ul>

# Continuity Software

## DOCSIS® Power Supply Monitoring

- Enterprise-class, web-enabled and standard-based
- Centralized transponder provisioning and inventory
- Scheduled standby tests for preventive maintenance
- Standby event dashboards



### ➤ Enterprise-class Software

Web-enabled and standard-based Continuity-SPS (Standby Power Supply) is a flexible, standby power supply status monitoring solution. Based on HMS and DOCSIS standards, Continuity-SPS supports any standards-based transponder, providing cable operators with an enterprise-class, centralized, feature-rich, web-enabled tool to monitor all the standby power supplies in their network.

### ➤ Scheduled Standby Tests Allow for Preventive Maintenance

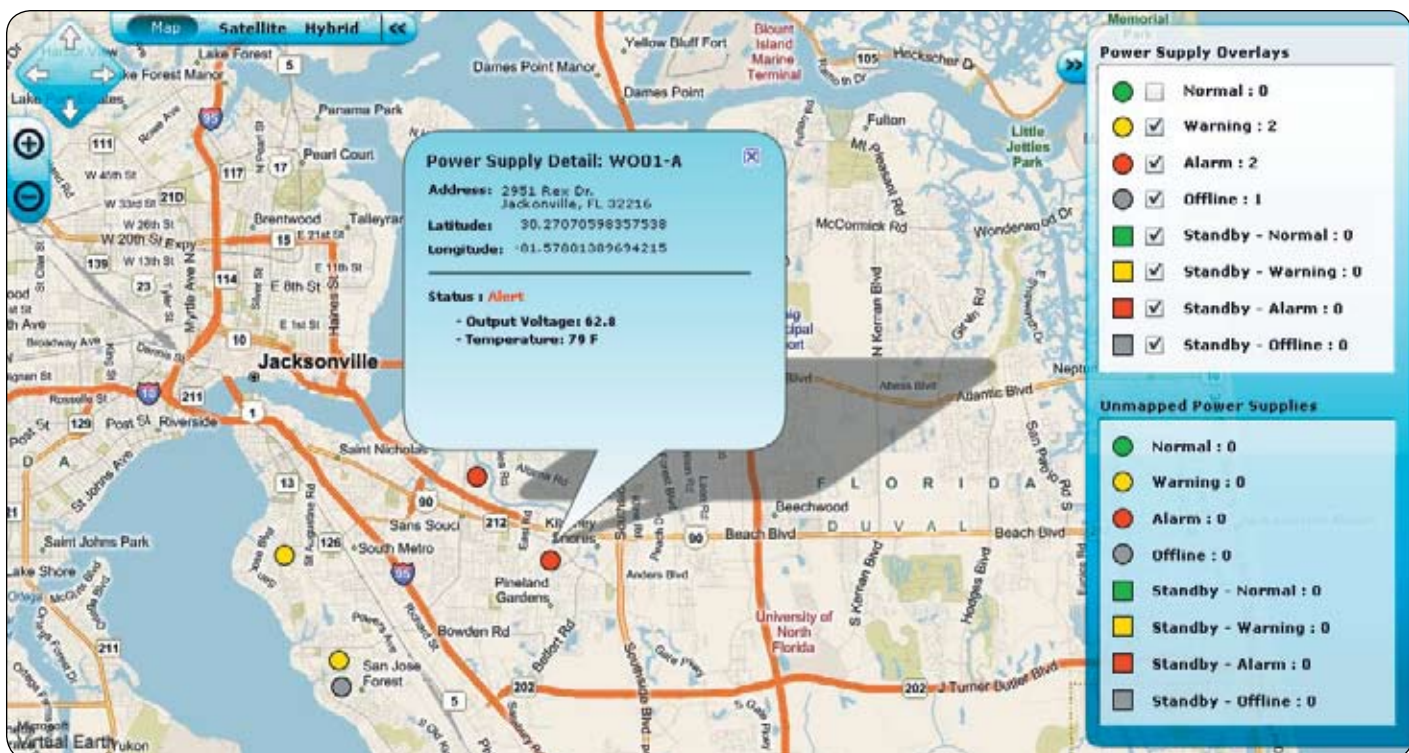
Continuity-SPS allows you to proactively schedule standby tests, which will alarm on risk areas on the network. A dashboard graphically updates individual battery voltages from standby tests every minute, making it easy to identify questionable batteries. These batteries can be replaced during scheduled maintenance visits before they turn the next standby event into an outage.

### ➤ Centralized Transponder Provisioning and Inventory

With Continuity-SPS you can automatically discover and provision all of your transponders from one central location. Continuity-SPS also includes an up-to-date inventory of all your transponders that can be exported into Excel or CSV.

### ➤ Standby Event Dashboard

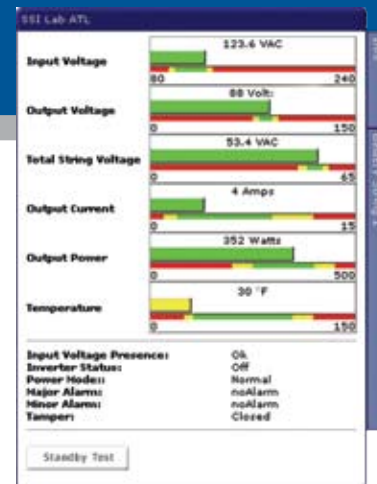
Continuity-SPS shows all current, standby events in an easy-to-read dashboard. For each event, the standby event dashboard displays summaries of past standby events and shows real-time battery voltages. The standby event dashboard provides a powerful view into the network during a power outage.



# Continuity Software

## DOCSIS® Power Supply Monitoring

- Powerful visualization and reporting
- Integration with other systems
- Easy to deploy
- Flexible Alarm notification



### ➤ Alarm Notification

Continuity-SPS generates alarms for a configurable set of warnings and/or alerts according to rules defined by the operator. Real-time alert notification and acknowledgement helps the operator to reduce downtime due to power failures by facilitating a rapid and accurate response to problems. Alert notification can be configured to contact scheduled support staff via email and/or text message when an alert condition arises.

### ➤ Integrating with Other Systems

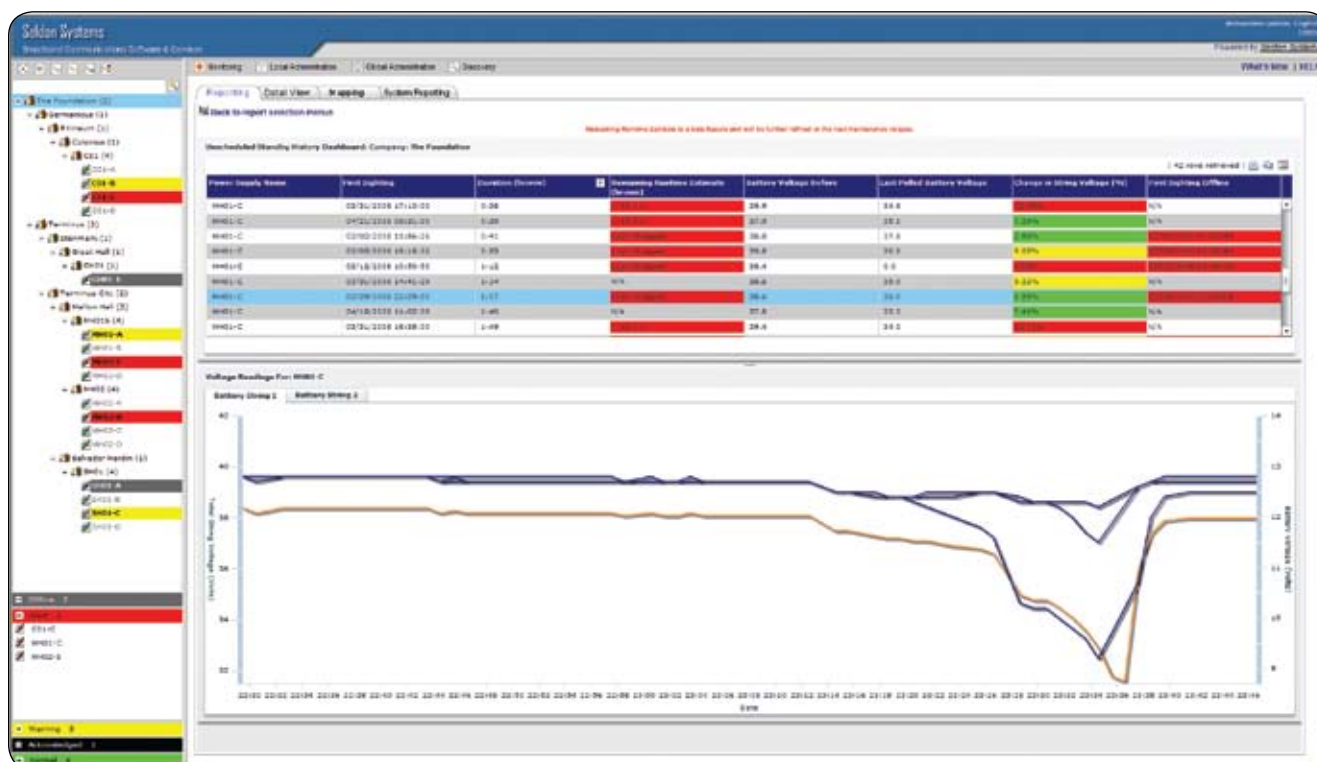
Continuity-SPS can send traps to other Network Monitoring Systems when an alarm is created, acknowledged, and closed. For example, critical alarms can be forwarded to the NMS at a centralized Network Operations Center.

### ➤ Powerful Visualization and Reporting

Continuity-SPS shows power supplies in multiple views: as a tree structure that represents your network layout; grouped by status (such as "Alert" or "Offline"); and on a map (using address or latitude and longitude to determine the location). Power Supplies are always color-coded based on their status ("Warning" or "Standby"), helping the user navigate Continuity-SPS easily and draw conclusions quickly (such as identifying a widespread outage by observing a cluster of offline power supplies on the map).

### ➤ Easy to Deploy

Cable operators can access Continuity-SPS from any web browser. The application is delivered as an appliance that includes server, database and Continuity-SPS software for installation in their own data center.











# Enclosure Systems

*Regardless of the location of a powering system, a solid enclosure is an essential part of the plan. With one of Alpha's agency certified enclosures, your power systems are protected from changes in the climate or weather.*

## ➤ LPE Enclosure

The LPE is an ideal solution for cable network power where traditional equipment is too large or bulky. Designed for multiple dwelling units, the LPE is more than 40 percent smaller than a standard PWE enclosure. Engineered to work with the XM2-300HP power supply and a single 220 GXL or two 70 HPL-FT batteries, the LPE enclosure offers a low-profile solution to keep your customer's communications alive.

## ➤ NPS Enclosure

The NPS enclosure is for use in business parks, node segmentation and plant extension applications. It is specifically designed for indoor and outdoor installations requiring lower power, a smaller footprint and embedded DOCSIS® or proprietary status monitoring capability. The NPS can be conveniently mounted in an equipment rack, on a wall, on a pole or even on a floor or pedestal using the appropriate installation kit.

## ➤ Pole Mount Enclosures

Alpha's Pole Mount enclosures are the most durable broadband power supply enclosures in the industry. Each enclosure comes with a removable door and easy opening lid. Standard features include high magnetic circuit breaker, duplex AC receptacle and service power inserter. Optional features include battery integration tray, surge protector, battery heater mat, storm hood and battery expansion cabinets.

## ➤ Ground Mount Enclosures

Alpha's Ground Mount enclosures can be seen installed all over the world. Each enclosure comes with a removable door and easy opening lid. Standard features include high magnetic circuit breaker, duplex AC receptacle and service power inserter. Optional features include battery integration tray, surge protector, battery heater mat, storm hood, battery expansion cabinets and meter enclosure models.

## ➤ Extended Runtime Add-on Enclosures

Alpha's battery expansion cabinets have the same rugged construction as the rest of the enclosure line. These cabinets allow a retrofit battery upgrade to increase runtime on VoIP networks. Available options include top and bottom mount cabinets for most standard Alpha enclosures, as well as stand alone options to work with any Broadband enclosure.

## ➤ Powernode Systems

Alpha's Powernode (PN) Series enclosures offer flexibility and modular expandability for broadband powering applications. Supporting centralized or distributed powering architectures, PN Series enclosures accommodate multiple power supplies, battery strings and natural gas or propane generators.

## ➤ Enclosure Accessories

Extend battery runtime and protect your power system investment with enclosure accessories. Security add-ons help prevent the theft of valuable equipment, while accessories like Battery Heaters Mats and Battery Spacers help get the best performance from your batteries in any climate or condition.

## ➤ Surge Protection

Alpha's surge protection devices provide reliable protection of power supplies and related equipment from the damaging powerline disturbances common to cable and broadband applications.

## ➤ Precast Pads for Enclosures

Alpha offers a line of precast, polymer concrete pads for most Alpha Enclosures including AlphaGen™ generator systems. All precast pads include 3/8" mounting hardware to ease field installation.

## ➤ Pedestal Support Series

Alpha provides two pedestal support systems for the UPE Series ground mount enclosures. The PS-6 supports UPE Series 3 and 4 battery enclosures and the PS-6XL, with a larger battery vault, supports 3, 4, 6 and 8 battery enclosures.

## LPE Enclosure

### Indoor/Outdoor Enclosure

- Economical and lightweight enclosure solution
- Ideal for RFoG, MDU and N+0 applications
- More than 40% smaller than Alpha's standard PWE-3 system
- Pole, wall or ground mount options



LPE Enclosure

#### LPE Enclosure (For use with XM2-300HP)

Mechanical	
Dimensions H x W x D (in/mm):	26 x 16.4 x 11.25 / 660 x 417 x 286
Weight (lb/kg):	25 / 11.3

Specifications			
Material:	Exterior powdercoated aluminum	Battery:	220 GXL or two 70 HPL-FTs
Door and Lid Seal:	Poron gasketing	Tamper Switch:	Optional
Color:	Gray (custom colors available)	Groundmount Pedestal:	Optional
Lid:	Removable	Service Power Inserter:	Optional SPI or SPI-RF
Door:	Hinged removable		

## NPS Enclosure






### Indoor/Outdoor Enclosure

- For low power applications including fiber deep up to N+6 applications
- More than 22% smaller than Alpha's standard PWE-3 system
- Convenient pole, wall, ground and rack mount options
- Optional AlphaGuard™ battery balancer and SPI-RF service power inserter



NPS Enclosure

#### NPS Enclosure (For use with XM2-906HP and XM2-300HP)

Models:	NPS-R	NPS-W1	NPS-W2	NPS-F	NPS-P
Configurations					
Installation:	Indoor	Indoor	Outdoor	Indoor	Outdoor
Description:	19" and 23" Rack mount	Wall mount	Wall mount	Floor mount	Pole mount
Mechanical					
Dimensions H x W x D (in/mm):	22.75 x 19 x 14.14 / 578 x 432 x 359	22.75 x 17 x 14.14 / 578 x 432 x 359	22.75 x 17 x 14.14 / 578 x 432 x 359	22.75 x 17 x 14.14 / 578 x 432 x 359	22.75 x 17 x 14.14 / 578 x 432 x 359
Weight (lb/kg):	39 / 17.7	39 / 17.7	39 / 17.7	39 / 17.7	39 / 17.7
Node Power Supply Enclosure Configurations:			 With GXL Batteries	 With 115 HPL Batteries	

Specifications			
Material:	Exterior powdercoated aluminum	Door:	Hinged removable
Door and Lid Seal:	Poron gasketing	Tamper Switch:	Optional
Color:	Gray (custom colors available)	Battery Side Tray:	Optional
Lid:	Removable		

# PWE Enclosure

## Outdoor Pole Mount Enclosure

- Engineered for broadband powering applications
- Aluminum welded construction and durable powdercoated exterior
- Agency certified to meet applicable industry standards
- Internal or external SUSE rated service entrance options
- Optional Battery Integration Tray (BIT)
- Portable generator cabling access door
- Optional Northern Enclosure available for colder climates



PWE-3

### PWE Enclosures

Models:	PWE-3	PWE-3 Northern Enclosure	PWE-4	PWE-6	PWE-6 Northern Enclosure
<b>Mechanical</b>					
<b>Dimensions H x W x D (in/mm):</b>	24.5 x 24.3 x 14 / 622 x 615 x 355	25.4 x 24.8 x 14.1 / 645 x 628 x 359	24.8 x 30.3 x 16 / 629 x 768 x 406	36.8 x 24.3 x 14 / 933 x 615 x 355	37.7 x 24.8 x 14.1 / 958 x 628 x 359
<b>Weight (lb/kg):</b>	39 / 18 (without batteries)	42 / 19.1 (without batteries)	57 / 26 (without batteries)	68 / 31 (without batteries)	73 / 33.1 (without batteries)
<b>PWE Enclosure Configurations</b>					

### PWE Enclosures (cont.)

Models:	PWE-6FT	PWE-8	PWE-9	PWE-D36
<b>Mechanical</b>				
<b>Dimensions H x W x D (in/mm):</b>	27.5 x 29.3 x 17.5 / 698 x 753 x 445	36.9 x 30.3 x 16 / 937 x 768 x 406	47 x 24.3 x 14 / 1194 x 615 x 355	47 x 24.3 x 14 / 1194 x 615 x 355
<b>Weight (lb/kg):</b>	57 / 26 (without batteries)	121 / 55 (without batteries)	85 / 38.5 (without batteries)	75 / 34 (without batteries)
<b>PWE Enclosure Configurations</b>				

Specifications	
<b>Material:</b>	Exterior powdercoated aluminum
<b>Door and Lid Seal:</b>	Poron gasketing
<b>Color:</b>	Gray (custom colors available)
<b>Lid:</b>	Removable
<b>Door:</b>	Hinged removable
<b>Pole Mount:</b>	Galvanized steel brackets for wood, and concrete pole mount and wall mount
<b>Tamper Switch:</b>	Optional
<b>Battery Side Tray:</b>	Optional

### Northern Enclosure Hood and Door for Colder Climates



Northern Enclosures feature Z-bracket, vented hood and doors with no batting required.

# UPE and UPE-M Enclosures

## Outdoor Ground Mount Enclosures

- Engineered to accommodate broadband powering applications
- Internal or external SUSE rated service entrance options available
- Enclosures are CSA/UL certified to meet applicable industry standards
- Aluminum welded construction and durable powdercoated exterior
- Portable generator cabling access door
- Multiple enclosure accessories and options available



UPE-6

### UPE - Ground Mount Enclosures

Models:	UPE-3	UPE-4	UPE-6	UPE-6L	UPE-8
<b>Mechanical</b>					
Dimensions H x W x D (in/mm):	33.5 x 26 x 15 / 851 x 660 x 381	35 x 34.5 x 15 / 889 x 876 x 381	48 x 26 x 15 / 1219 x 660 x 381	36 x 26 x 15 / 914 x 882 x 381	45.5 x 34.5 x 15 / 1136 x 882 x 381
Weight (lb/kg):	61 / 28 (without batteries)	72 / 32 (without batteries)	75 / 34 (without batteries)	68 / 30 (without batteries)	121 / 55 (without batteries)
UPE Configurations:					

### UPE - Metered Ground Mount Enclosures

Models:	UPE-M3	UPE-M6	UPE-M8
<b>Mechanical</b>			
Dimensions H x W x D (in/mm):	45 x 26 x 19.7 / 1143 x 660 x 482	57.3 x 26 x 19.7 / 1455 x 660 x 482	50 x 32 x 20.5 / 1270 x 813 x 521
Weight (lb/kg):	100 / 44 (without batteries)	130 / 59 (without batteries)	140 / 64 (without batteries)
UPE-M Configurations:			

Specifications	
Material:	Exterior powdercoated aluminum
Door and Lid Seal:	Poron gasketing
Color:	Gray (custom colors available)
Lid:	Removable
Door:	Removable/Lockable
Ground Mount:	Precast polymer concrete pad (optional)
Tamper Switch:	Optional
Battery Side Tray:	Optional











# Extended Runtime Enclosures

- Upgrade existing Alpha enclosures
- Extend existing runtimes by up to 300%
- Plant hardening option for voice and data broadband networks



BE-PWE mounted on PWE-3

BE-PWE	
	<p>Adds battery capacity to the PWE-3 Enclosure Installs onto top of PWE-3 Kit Includes enclosure with sliding battery tray, door, battery cabling and pole mount bracket Compatible with AlphaCell™ 165, 195 and 220 Batteries</p>
UBE-PWE	
	<p>Adds battery capacity to the PWE-3 Enclosure Installs onto bottom of PWE-3 Kit Includes enclosure with sliding battery tray, door, battery cabling and pole mount bracket Compatible with AlphaCell 165, 195 and 220 Batteries</p>
BE-UPE	
	<p>Adds battery capacity to the UPE-3 Enclosure Kit Includes enclosure, and battery cabling Compatible with AlphaCell 165, 195 and 220 Batteries</p>
PWE-SG	
	<p>Adds battery capacity to any OEM pole mount enclosure Installs underneath of existing pole mount enclosure Kit includes conduit kit, battery cabling and pole mount bracket Accommodates 3 or 4 AlphaCell 165, 195 or 220 Batteries</p>

LBE-3	
	<p>Adds battery capacity to Lectro 3 battery pole mount enclosure Installs onto bottom of Lectro Enclosure Kit Includes enclosure with sliding battery tray, door, battery cabling, and pole mount bracket Compatible with AlphaCell 165, 195 and 220 Batteries</p>
Underground Battery Vaults	
	<p>Thermally stable underground environment helps promote maximum battery life and performance Reduces visual impact with below-grade battery installation Durable, maintenance-free, long-lasting, utility approved and non-combustible material Large battery capacity houses up to eight batteries for extended backup time Flexible enclosure options for both pole and ground mount systems</p>
PWE Generator Expansion Module	
	<p>Provides an easy means to pole mount the AlphaGen™ EU2000 Protects generator from inclement weather Prevents theft of valuable portable generators Field installable using two rails attached to the bottom of the PWE Backwards compatible with existing enclosure Accommodates Line Transfer Switch (LTS) Can be easily removed after extended outage or left in place Designed to provide four to ten hours of additional runtime</p>
Universal Generator Expansion Module	
	<p>Add an AlphaGen EU2000 to an Alpha PWE or UPE Enclosure Protects generator from inclement weather Prevents theft of valuable portable generators Backwards compatible with existing enclosure Accommodates Line Transfer Switch (LTS) Can be easily removed after extended outage or left in place Designed to provide four to ten hours of additional runtime</p>

# Powernode Systems

## Extended Runtime Powering

- Supports centralized or distributed powering architectures
- Compatible with AlphaGen™ generator systems or multiple battery strings for extended runtime solutions



PN-3 with AlphaGen

### CESC

Specifications	
Dimensions H x W x D (in/mm):	44 x 15 x 24 / 1118 x 381 x 610
Weight (lb/kg):	51 / 23.13
Power Supply Capacity:	One power supply
Color:	Seafoam Green, optional colors available
Standard Features:	Removable/Lockable doors
Finish:	Durable powdercoat exterior
Material:	Aluminum

CESC
Sidecar 1 Power Supply, 1 Battery String

### PN-3

Specifications	
Dimensions H x W x D (in/mm):	44 x 26 x 24 / 1118 x 660 x 610
Weight (lb/kg):	115 / 52 (without trays)
Power Supply Capacity:	Up to two power supplies
Color:	Seafoam Green, optional colors available
Standard Features:	Removable/Lockable doors
Finish:	Durable powdercoat exterior
Material:	Aluminum

Single PN-3	Dual PN-3	PN-3/CE-3X2
1 Power Supply 2 Battery Strings	2 Power Supplies 4 Battery Strings	2 Power Supplies 1 Battery String AlphaGen™ Generator
The PN-3 enclosure can accommodate a maximum combination of three equipment or battery trays.		

### PN-3-HS (High Security)

Specifications	
Dimensions H x W x D (in/mm):	44 x 26 x 24 / 1118 x 660 x 610
Weight (lb/kg):	115 / 52 (without trays)
Power Supply Capacity:	Up to two power supplies
Color:	Seafoam Green, optional colors available
Standard Features:	Removable/Lockable doors
Finish:	Durable powdercoat exterior
Material:	Aluminum

PN-3-HS	PN-3/SC-HS	PN-3/SC-HS
Battery Cabinet 3 Battery Strings	Sidecar and Battery Cabinet 1 Power Supply 4 Battery Strings	High Security Locks
The PN-3/SC-HS system has recessed star bolt security locks to prevent unauthorized entry. Reinforced door frames. Doors reinforced with welded channel for strength.		

# Powernode Systems

## Extended Runtime Powering

- SUSE and EUSERC rated options available
- CSA/UL certified to meet applicable industry standards
- High security options



PN-4 with AlphaGen

### CESC-3x2




Specifications	
<b>Dimensions H x W x D (in/mm):</b>	44 x 41 x 24 / 1118 x 1041 x 610
<b>Weight (lb/kg):</b>	428 / 194.1 (without trays)
<b>Power Supply Capacity:</b>	One power supply
<b>Color:</b>	Seafoam Green, optional colors available
<b>Standard Features:</b>	Removable/Lockable doors
<b>Finish:</b>	Durable powdercoat exterior
<b>Material:</b>	Aluminum

CESC-3x2

1 Power Supply 1 Battery String AlphaGen™ Generator
The most compact, cost effective "all-in-one" power system. The CESC-3x provides for a single power module, batteries, and generator in a low profile, minimum footprint design.




### PN-4

Specifications	
<b>Dimensions H x W x D (in/mm):</b>	52 x 26 x 24 / 1320 x 660 x 610
<b>Weight (lb/kg):</b>	145 / 66 (without trays)
<b>Power Supply Capacity:</b>	Up to three power supplies
<b>Color:</b>	Seafoam Green, optional colors available
<b>Standard Features:</b>	Removable/Lockable doors
<b>Finish:</b>	Durable powdercoat exterior
<b>Material:</b>	Aluminum

Single PN-4	Dual PN-4	PN-4/CE-9X2
		
2 Power Supplies 2 Battery Strings	3 Power Supplies 4 Battery Strings	2 Power Supplies 2 Battery Strings AlphaGen Generator
The PN-4 enclosure can accommodate a maximum combination of four trays. A maximum of either three power modules or three battery trays can be installed.		

### PN-6

Specifications	
<b>Dimensions H x W x D (in/mm):</b>	39 x 52 x 24 / 990 x 1321 x 610
<b>Weight (lb/kg):</b>	250 / 113 (without trays)
<b>Power Supply Capacity:</b>	Up to three power supplies
<b>Color:</b>	Seafoam Green, optional colors available
<b>Standard Features:</b>	Removable/lockable doors
<b>Finish:</b>	Durable powdercoat exterior
<b>Material:</b>	Aluminum

PN-6	PN-6	PN-6 and PN-6X
		
3 Power Modules 2 48V Battery strings	Optional Battery Drawer 3 Power Modules 4 48V Battery strings	3 Power Modules 2 48V Battery strings Optional Battery Drawer AlphaGen Generator
The PN-6 offers a low profile design that accommodates up to three power modules. An optional Battery Drawer (BD-8) fits under the PN-6 to provide easy access storage for up to eight batteries.		
Note: PN-6 with PN-6x dimensions are (in/mm) 57H x 91W x 24D / 1448H x 2311W x 610D with BD-8 and generator pedestal. PN-6 with PN-6x dimensions are (in/mm) 39H x 91W x 24D / 991H x 2311W x 610D without BD-8 and generator pedestal		



## Enclosure Accessories

- Extend battery runtime
- Optimize system performance
- Ease installation and maintenance



# Enclosure Accessories

- Maximize power system investment
- Prevent theft and damage
- Cooling options extend battery and power supply life



PWE High Security Device

<div data-bbox="187 563 217 591">1</div> <div data-bbox="329 563 699 589">Enclosure Cooling Fan (ECF) Systems</div> <div data-bbox="187 606 425 787"> </div> <div data-bbox="305 793 428 815">PWE/UPE series</div> <div data-bbox="187 825 425 1006"> </div> <div data-bbox="295 1010 428 1029">PowerNode series</div>	<p>Enclosure Cooling Fan enhances air circulation in an enclosure's battery compartment</p> <p>Air flow eliminates "hotspot" premature battery failures in hotter climates</p> <p>Significantly reduces the power supply compartment temperature</p> <p>Calculated Mean Time Between Failure (MTBF) studies indicate this will extend Power Supply life by two years</p>
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<div data-bbox="925 563 954 591">3</div> <div data-bbox="1131 563 1385 589">Battery Spacer Clip (BSC)</div> <div data-bbox="951 644 1164 991"> </div>	<p>Designed for use with most group 27 or 31 VRLA batteries</p> <p>Easy installation - clips to the top of the battery</p> <p>Increases battery life expectancy by providing critical battery spacing required for proper ventilation</p> <p>Accurately positions and secures the Remote Temperature Sensor (RTS)</p> <p>Strongly recommended for hot climates</p> <p>Designed to last over 30 years or lifetime of the equipment</p>
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<div data-bbox="187 1102 425 1281"> </div>	<div data-bbox="387 1053 642 1078">PWE High Security Device</div> <p>High visibility theft deterrent</p> <p>Stainless steel construction-corrosion resistant</p> <p>Locking system prevents access to padlock shackle (to prevent cutting of lock)</p>
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<div data-bbox="925 1053 954 1081">4</div> <div data-bbox="1149 1053 1367 1081">Battery Retaining Bar</div> <div data-bbox="925 1102 1164 1281"> </div>	<p>Provides added security against the batteries from falling out or being thrown from an enclosure</p> <p>Easily snaps into place</p>
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<div data-bbox="187 1357 425 1540"> </div>	<div data-bbox="217 1308 814 1336">Ground Mount Security Bar For UPE / UPE-M / PN Enclosures</div> <p>High visibility theft deterrent</p> <p>Powdercoated-corrosion resistant</p> <p>Locking system prevents access to padlock shackle (to prevent cutting of lock)</p>
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<div data-bbox="925 1357 1164 1540"> </div>	<div data-bbox="1137 1308 1378 1336">Module Retaining Cable</div> <p>Prevents power supply from sliding off the shelf or being thrown from an PWE enclosure</p> <p>Bolted to enclosure and clips to handle of supply</p> <p>Constructed of braided steel cable and carabiner style clips</p>
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<div data-bbox="187 1615 425 1796"> </div>	<div data-bbox="439 1568 590 1596">Tamper Switch</div> <p>Magnetic door switch provides an intrusion alarm through status monitoring</p> <p>Available with normally closed or normally open contacts</p>
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<div data-bbox="187 1870 413 2051"> </div>	<div data-bbox="187 1823 217 1851">2</div> <div data-bbox="418 1823 611 1851">Battery Heater Mat</div> <p>Consumes 30% less power than previous designs</p> <p>Durable polyester construction and insulated design</p> <p>Sealed on-mat electronics for maximum protection</p> <p>On-mat thermal switch and thermal fuse for redundant safety</p> <p>Piggyback plug standard on 120V models</p>
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<div data-bbox="925 1615 1164 2036"> </div>	<div data-bbox="925 1568 954 1596">5</div> <div data-bbox="1114 1568 1402 1596">Battery Integration Tray (BIT)</div> <p>Factory installed option in any new PWE-3/6 and UPE-3/6 enclosures</p> <p>Eliminates battery cable kits and slide trays</p> <p>Batteries are individually wired</p> <p>Greatly reduces battery preventive maintenance cost</p> <p>Improves wire management</p> <p>Pre-wired voltage sense leads for transponder and AlphaGuard</p> <p>Modular 75A Anderson connectors</p> <p>Allows for the direct connection of the DCX3000 portable generator</p>
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# Surge Protection

- UL 1449 3<sup>rd</sup> Edition Approved
- UL 1449 is required for installing surge protection devices in cable enclosures
- SM Series has Status Monitoring failure alarm via DSM3 cable harness



## Surge Protection

Operating Voltage:	120V Models				240V Models			120/240V Models
Model Selection:	Good	Better	Best	Best	Good	Best	Best	Best
Series Model:	LA-P+120	LA-P-120T	LA-P-120S	LA-P-120SM	LA-P+240	LA-P-240S	LA-P-240SM	ISA 120/240 <sup>1</sup>
Part Number:	020-098-24	162-046-10	021-077-22	021-077-20	020-098-25	021-077-23	021-077-21	162-041-10
Outlet Type / Pass Thru:	Ⓢ / No	Ⓢ / Yes	Ⓢ / Yes	Ⓢ / Yes	Ⓢ / No	Ⓢ / Yes	Ⓢ / Yes	Hardwired / NA
Status Monitor Harness:	No	No	No	Yes	No	No	Yes	No
Protection:	L/N/G	L/N/G	L/N/G	L/N/G	L1/L2/G	L1/L2/G	L1/L2/G	L/N/G
Operating Temperature:	-40 to 55°C / -40 to 131°F	-40 to 55°C / -40 to 131°F	-40 to 55°C / -40 to 131°F	-40 to 55°C / -40 to 131°F	-40 to 55°C / -40 to 131°F	-40 to 55°C / -40 to 131°F	-40 to 55°C / -40 to 131°F	-40 to 55°C / -40 to 131°F
LED Indicator:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Energy Absorption (Joules):	210	360	735	735	112	1170	1170	680

UL 1449 3 <sup>rd</sup> Edition Specifications								
Voltage Let Through Protection Rating:	700Vp	660Vp <sup>2</sup>	600Vp	600Vp	1200Vp	900Vp	900Vp	600Vp <sup>2</sup> / 900Vp <sup>2</sup>
Nominal Discharge Current Rating:	3kA	3kA	5kA	5kA	3kA	5kA	5kA	10kA <sup>2</sup>
Maximum Continuous Operating Voltage (MCOV):	150Vac	130Vac	175Vac	175Vac	320Vac	300Vac	300Vac	150Vac/300Vac
Notes:								
¹ The ISA surge protection devices are factory wired on the load side of the service entrance and are available for field replacement. These arrestors should be installed by a licensed electrician.								
² Pending UL 1449 3 <sup>rd</sup> edition certification.								

### COAX Protectors

Ideally suited to protect costly status-monitoring transponders, digital set top boxes, cable modems and satellite receivers in the headend as well as high-end HDTV sets from potentially damaging surges. The patented coaxial gas tube surge protector is equipped with an integral fail-safe mechanism. Listed to UL 497, CSA Listed Certified and Complies with 1999 National Electric Code.

Part Number	Description
162-029-10:	Female/Female connector configuration, "F" type connector
162-027-10:	Male/Female connector configuration, "F" type connector
162-028-10:	Female/Female connector configuration, "F" type connector with integral ground block

COAX Protectors

COAX Protector Specifications		
Part Number:	162-029-10/162-027-10	162-028-10
RF Performance:	DC – 1GHz	1GHz – 1.5GHz
Characteristic Impedance:	75Ohms	75Ohms
Insertion Loss (includes flatness):	<0.1dB	<0.2dB
Return Loss:	>30dB	>20dB
Protection		
DC Breakdown @ 2000V/s:	150V to 300V	
Impulse Breakdown @ 100V/μs:	<450V	
Insulation Resistance:	>100 MegOhms	
Surge Life		
10A, 10/1000μs:	>1500 Surges	
100A, 10/1000μs:	>100 Surges	
1000A, 10/1000μs:	>10 Surges	
5000A, 8/20μs:	>10 Surges	
AC Life		
5A, 1000Vac, 1s:	>5 Operations	
1A, 1000Vac, 1s:	>60 Operations	
Failshort		
30A, 1000Vac:	>15min	
Operating Temperature:	-40 to 65°C / -40 to 149°F	

# Precast Pads

## For Alpha Enclosures

- Polymer Concrete pads are reinforced with mineral aggregates
- Precast concrete pads are made from high-strength fiber-cement and lightweight concrete
- Includes 3/8" mounting hardware



### Polymer Concrete (PCC)

Models:	Enclosure	Dimensions H x W x D (in/mm)	Weight (lb/kg)
PCC-3:	PN-3 or PN-4	36 x 38 x 3 / 914 x 965 x 76	120 / 54.4
PCC-3-3:	PN-3 + PN-3 or PN-4 + PN-4	36 x 65 x 3 / 914 x 1651 x 76	195 / 88.4
PCC-3-3X:	PN-3 + CE-3X2 or PN-4 + CE-9X2	36 x 65 x 3 / 914 x 1651 x 76	200 / 90.7
PCC-3X:	CE-3X2 or CE-9X2	36 x 38 x 3 / 914 x 965 x 76	120 / 54.4
PCC-3X-3G:	CE3X2 + CE3G or CE-9X2 + CE3G	36 x 64 x 3 / 914 x 1626 x 76	190 / 86.1
PCC-7K5:	7.5K	51 x 36 x 3 / 1295 x 914 x 76	190 / 86.1
PCC-A-PN6:	PN-6 (Part 1 of 2)	29 x 58 x 3 / 736 x 1473 x 76	232 / 106.5
PCC-B-PN6X:	7.5K (Part 2 of 2)	29 x 42 x 3 / 736 x 1066 x 76	125 / 56.6
PCC-PN6:	PN-6	36 x 64 x 3 / 914 x 1626 x 76	180 / 78.5
PCC-RMB:	RMB	44 x 42 x 3 / 1117 x 1066 x 76	180 / 81.6
PCC-SC:	CESC	27 x 36 x 3 / 685 x 914 x 76	85 / 38.5
PCC-SC-3X:	CESC + CE-3X2 or CESC + CE-9X2	36 x 54 x 3 / 914 x 1372 x 76	170 / 77.1
PCC-SCFN:	SCFN	27 x 36 x 3 / 685 x 914 x 76	85 / 38.5
PCC-SC-RMB:	SC + RMB	44 x 54 x 3 / 1117 x 1371 x 76	230 / 104.3
PCC-UPE:	UPE-3, UPE-4, UPE-6 or UPE-8	28 x 45 x 3 / 711 x 1143 x 76	190 / 86.1
PCC-UPEM:	UPE-M3, UPE-M6 or UPE-M8	40 x 40 x 3 / 1016 x 1016 x 76	144 / 65

### Precast Concrete (PCD)

Models:	Enclosure	Dimensions H x W x D (in/mm)	Weight (lb/kg)
PCD-3:	PN-3 or PN-4	36 x 38 x 3 / 914 x 965 x 76	154 / 69.9
PCD-3-3:	PN-3 + PN-3 or PN-4 + PN-4	36 x 64 x 3 / 914 x 1625 x 76	264 / 11.8
PCD-3-3X:	PN-3 + CE-3X2 or PN-4 + CE-9X2	36 x 65 x 3 / 914 x 1625 x 76	264 / 119.8
PCD-3-3X-3G:	PN-3 + CE-3X2 + CE-G or PN-4 + CE-9X2 + CE-G	36 x 90 x 3 / 914 x 2286 x 76	366 / 166
PCD-3X:	CE-3X2 or CE-9X2	36 x 38 x 3 / 914 x 965 x 76	154 / 69.9
PCD-3X-3G:	CE-3X2 + CE-3G or CE-9X2 + CE-9G	36 x 65 x 3 / 914 x 1625 x 76	260 / 117.9
PCD-A-PN6:	PN-6 (Part 1 of 2)	29 x 58 x 3 / 736 x 1473 x 76	196 / 88.9
PCD-B-PN6X:	7.5K (Part 2 of 2)	29 x 42 x 3 / 736 x 1066 x 76	142 / 64.4
PCD-D36:	PWE-D36 or PWE-9	27 x 44 x 3 / 685 x 1117 x 76	134 / 60.8
PCD-SC:	CESC	27 x 38 x 3 / 685 x 914 x 76	114 / 51.7
PCD-SC-3X:	CESC + CE-3X2 or CESC + CE-9X2	36 x 53 x 3 / 914 x 1346 x 76	220 / 99.8
PCD-SC-3X-3G:	CESC + CE-3X2 + CE-G	36 x 79 x 3 / 914 x 2006 x 76	325 / 147.4
PCD-UPE3:	UPE-3 or UPE-6	27 x 44 x 3 / 685 x 1117 x 76	134 / 60.8
PCD-UPE4:	UPE-4 or UPE-8	27 x 44 x 3 / 685 x 1117 x 76	134 / 60.8

# Pedestal Support Series

## Pedestal Support for UPE Enclosures

- Three pedestal support systems for all UPE series applications
- Universal cover is easily field-configured
- Vaults for greater stability and cable slack storage
- Provides space for sweeps to enter the enclosure



### Structural Foam Precast Enclosure Pedestals

Models:	UPE-3	UPE-4	UPE-6 UPE-6L	UPE-8	UPE-M3	UPE-M6	UPE-M8
PS-1:	-	-	-	-	■	■	■
PS-2-ECR:	■	■	■	■	-	-	-
PS-6:	■	■	■	■	-	-	-
PS-6XL:	■	■	■	■	-	-	-

Note: Meter load center and ECR through hole in PS6 cover is easily drilled through as required.

Features	
Polyethylene Construction:	Eliminates the need for costly and time consuming concrete work
Large Body Design:	Provides convenient working space for connections
Flush Mount Enclosure Surface:	No enclosure distortion due to uneven concrete installations
Mounting Hardware:	Included







# Generators

*Adding a generator to any type of power system provides additional peace of mind. For outside plant communication networks, a generator serves as assurance that even in severe conditions, you will be able to keep your system up and functioning. All AlphaGen™ systems are engineered to have significantly reduced noise levels, high power density and status monitoring.*

## ➤ AlphaGen Curbside Generator

The AlphaGen curbside generator system is specifically designed for outside plant communication networks. Every AlphaGen system incorporates industry leading power technology, including: totally automatic operation natural gas or propane powered engine generators, exclusive audible noise baffling, remote status monitoring features and durable weather resistant enclosures. Alpha offers a full line of AlphaGen systems specifically designed for easy integration to various power supply designs.

## ➤ AlphaGen DCX 3000 Portable Generator

The Alpha generator family includes a portable 3.0kW DC generator. The compact, lightweight AlphaGen generator is designed specifically for powering cable television, telecommunications and other broadband applications that do not have integrated generators as a primary component of the power system. The portable generator incorporates several technological advantages including: ultra quiet operation 36 or 48V selectable dual voltage output based on Permanent Magnet Generator (PMG) technology, 3000W of power and oversized fuel tank for up to 20 hours of runtime at 25% load or 7.2 hours at 100% load. Additional features include a convenient front panel with a keyed on/off switch, output connector, output indicators, voltmeter, fuel valve and engine choke.

## ➤ AlphaGen Portable Generator Trailer

Alpha Technologies introduces the AlphaGen Portable Generator Trailer, a custom-designed trailer to store, transport and deploy 28 AlphaGen generators and accessories. The trailer is 16ft long, has a 10,000lb GVWR and is completely enclosed. For nighttime emergencies, the trailer includes battery-operated interior lighting. The battery is always fully charged by a maintenance free solar panel charger. The trailer sits on a 6 x 2 inch tubular steel frame, the trailer's contents are protected with a patented corrosion protection system. The rugged, industrial-duty running gear includes dual Torflex rubber torsion axles with 16 inch radial tires, electric brakes, LED stop/tail/turn/marker lights and a 7-pin electrical connector. An adjustable height hitch includes DOT chains and choice of ball or pintle coupler.



# AlphaGen™ Curbside

## Broadband Generator Systems

- Cost-effective extended runtime solution for broadband powering applications
- Quiet operation, small size and low profile allow for easy installation in populated areas
- Eliminates the large quantities of batteries otherwise required for extended runtime







AlphaGen CE3x2-3G

### AlphaGen Curbside

Output Rating:	3.5kW		5.0kW		7.5kW
DC Output Voltage:	39V ±0.5V @ no load 36V configuration		39V ±0.5V @ no load 36V configuration		52V ±0.5V @ no load 48V configuration
	52V ±0.5V @ no load 48V configuration		52 ±0.5V @ no load 48V configuration		104V ±0.5V @ no load 96V configuration
DC Output Load Regulation:	0.5V		0.5V		0.5V
Output Current:	39V @ 90A max. / 52V @ 67A max.		39V @ 128A max. / 52V @ 96A max.		52V @ 144A max. / 104V @ 72A max.
Engine:	398cc, Air cooled, Single OHV 10.5hp (using natural gas fuel)				
RPM (Variable Speed):	2800 to 3600RPM		2800 to 3600RPM		2800 to 3600RPM
Acoustical Noise					
dBA 10' @ 100% Rated Load:	68.7		68.5		70.3
dBA 20' @ 100% Rated Load:	63		62.5		64.3
dBA 10' @ 70% Rated Load:	68.3		66.9		66.4
dBA 20' @ 70% Rated Load:	62.6		60.9		60.4
Models:	CE-3x2	CE-9x2	CE-3x2	CE-9x2	PN-6x
Dimensions H x W x D (in/mm):	44 x 26 x 24 / 1117.6 x 660.4 x 609.6	52 x 26 x 24 / 1320.8 x 660.4 x 609.6	44 x 26 x 24 / 1117.6 x 660.4 x 609.6	52 x 26 x 24 / 1320.8 x 660.4 x 609.6	39 x 39.3 x 24 / 914 x 998.2 x 609.6 (57 x 39.3 x 24 / 1447.8 x 998.2 x 609.6 with optional pedestal)
Weight (lb/kg):	383 / 174	413 / 187	383 / 174	413 / 187	338 / 174 (370 / 168 with optional pedestal)
APU Fuel Consumption					
Natural Gas (1000BTU/Ft. <sup>3</sup> ):	60ft <sup>3</sup> /hr		80ft <sup>3</sup> /hr		150ft <sup>3</sup> /hr
Propane Gas (2520BTU/Ft. <sup>3</sup> ):	0.82gal/hr - 30ft <sup>3</sup> /hr - 3.46lb/hr		1.10gal/hr - 40ft <sup>3</sup> /hr - 4.62lb/hr		1.48gal/hr - 50ft <sup>3</sup> /hr - 6.24lb/hr
Exterior Surface Temperature:	65°C / 149°F max (meets requirements of UL/CSA)				

All Models	
Gas Inlet Pressure:	0.5 to 2 PSI Inlet Pressure (Contact Alpha Engineering for additional supply resources)
Ign Charger Voltage:	13.5Vdc
Ign Charger Current:	6A max.
Remote Interface Length:	75ft typical. Distance depends upon installation, de-rating and wire gauge.
Agency Compliance:	UL1778, UL2200, NFPA 37/54/58 and 70, CSA C22.2 No.107.1, EMC/FCC Part 15 Class A
Fuel System, Controls and Monitoring:	The controls and fuel system meet applicable sections of NFPA 37, 54 and 58 for automatic unattended operation of remotely located generators. Full System Control and Status Monitoring included.
Sensors:	Gas hazard, pad shear, water intrusion and tamper
Safety Shutdowns:	Low oil pressure, over temp, low fuel pressure shutdown (propane only), water intrusion, pad shear, gas hazard (propane or natural gas), over-speed, over-crank
Optional Feature:	Cold Start Kit: provides additional starting capability at temperatures below -18°C / 0°F

AlphaGen Configuration Options	
	
CE-3x2 3.5 or 5kW	CE-9x2 3.5 or 5kW
	
CE-3/9G Propane Storage for Generator (For 3.5 and 5kW)	PN-6x 7.5kW (PN-6x is not compatible with CE-3/9G)



# Portable AC and DC Generators

## For Disaster Recovery and Preparedness

- Selectable 36 or 48Vdc output
- DC technology requires no Automatic Transfer Switch (ATS)
- No need to disconnect or reconnect power supply
- Super quiet operation: only 58dBA @ 22ft/7m
- Completely enclosed, water resistant
- Oversized metal gas tank with fuel level gauge for extended runtimes of up to 20 hours



AlphaGen DCX 3000

### AlphaGen™ DCX 3000

Part Number:	041-028-10
Engine:	Honda GX 200 6.5hp, air-cooled, OHV, single cylinder, manual recoil starting, manual choke
Rated Power:	2800W continuous, 3000W max.
Alternator:	Permanent magnet, brushless, bearingless
<b>Dual range selector</b>	
36V:	39.5Vdc nominal at generator output connector
48V:	52.5Vdc nominal at generator output connector
Output Regulation:	1Vdc
Control Features:	Automatic voltage regulation electronic governor over current protection analog voltmeter with back light
Cable Interface:	Anderson type SBE-80 connector
Fuel Tank:	3.4g / 12.8ltr metal tank with level gauge
<b>Runtime</b>	
@ 25% Load:	20hrs
@ 80% Load:	10hrs
@ 100% Load:	7.2hrs
Noise:	Approx. 58dBA @ 7m under full load
Frame:	Fully enclosed
Dry Weight (lb/kg):	Less than 118 / 53.5
Dimensions H x W x D (in/mm):	22.4 x 18.9 x 25.8 / 569 x 480 x 655
Agency:	CSA C22.2 No. 100-95, 107.1-01, 107.2-M89, 0.4 FCC part 15B Class A
<b>Required Accessories</b>	
Output Interface Cable (m/ft):	Available in 3 / 10, 9.1 / 30 or 15.2 / 50 lengths
Battery Interface Cable:	Choose Ring Lung, Heavy-Duty Alligator Clamp, or Y-adaptor*

### AlphaGen EU2000

Specifications		
The Portable AlphaGen in a Alpha-supplied single cylinder, 4-stroke OHC, gasoline, portable generator specially qualified for use in the GEM system. The AlphaGen portable generator can be easily and quickly installed or removed from GEM enclosures, allowing for dynamic and flexible responses to power outages.		
Output Voltage:	120Vac	A red and black portable generator with a carrying handle and a fuel tank.
Peak Rated Output:	2000VA	
Continuous Rated Output:	1600VA	
Noise Level:	53 to 59dBA	
Net Weight (lb/kg):	46.3 / 21	
Runtime:	4 to 15hrs	

Optional Accessories	
DCX-PG-WK:	Portable Generator Wheel Kit (P/N 745-793-20)
DCX-PG-HANDLE:	Locking Handle (P/N 745-792-20)
AG-PG-TOOL:	Punch Tool Kit For Enclosures (P/N 745-131-20)
AG-PG-UK:	Enclosure Upgrade Kit (P/N 745-131-21)
AG-CAB-KIT:	Cable Bag With Cable and Key Lanyard (P/N 745-764-21-001)
<b>Accessories</b>	
A black cable with a red Anderson connector on one end and a black Anderson connector on the other.	A red cable with a ring lug on one end and a black Anderson connector on the other.
30' Output Interface 10' P/N 875-324-22 30' P/N 875-324-20 50' P/N 875-324-21	Ring Lug Battery Interface P/N 874-946-21
A red cable with alligator clamps on both ends.	A red cable with a Y-adapter on one end and a black Anderson connector on the other.
Alligator Clamp Battery Interface P/N 874-946-20	Y-Adaptor Battery P/N 874-946-22
* Connects the power supply's battery input directly to the generator	

### AC Line Transfer Switch

The generator can be connected to the power supply using an optional Line Transfer Switch (LTS) that automatically switches the power supply to generator power during an outage. Once power has been restored, the Line Transfer Switch (LTS) transfers the load from the generator to qualified utility power without interruption to the load. There is no need for field personnel to manually switch the power supply to utility power.



# AlphaGen™ Portable Trailer

## Emergency Response and Disaster Recovery

- Securely holds 28 AlphaGen Portable DC generators
- Designed for storage and transportation of gasoline powered generators
- Generator hoist allows for single person deployment and recovery
- Customized 10,000lb trailer

When an emergency arises service operations need to respond immediately, and the Alpha generator trailer enables them to do just that.

These custom designed trailers eliminate generator storage and transportation issues, while increasing emergency preparedness. Designed to house, transport and deploy up to twenty-eight AlphaGen portable generators, these trailers are a proactive measure to ensure the necessary equipment can be deployed immediately. Having the AlphaGen portable generators fueled and ready to transport at a moment's notice greatly reduces the duration of system outages, a critical key to network reliability.



AlphaGen portable trailer



Choice of towing coupler on adjustable-height mount - 3" Pintle Ring or 2-5/16" Ball



24" Aluminum Tread Plate Stone Guard with Wrapped Integrated Corners



Rear Swing Down Ramp Door with Spring Assist and Non-Skid Surface

# AlphaGen™ Portable Trailer

Emergency Response and Disaster Recovery

- All welded steel construction with space for additional materials
- Complete aluminum interior and diamond tread floor
- Internal lighting for nighttime deployments
- Bay lights and hoist powered by internal battery system with solar maintenance charger



Portable generator racks securely hold 28 AlphaGen DCX3000 DC generators in transit



All-Welded Steel Construction with Shelving for Additional Materials



Generator Hoist to Raise and Lower Second Shelf Generators



Heavy Duty Rails Provide Smooth Movement of Units Through Trailer





BATTERY  
BREAKER

N+1

N+1

OUTPUT 2

BATTERY  
INPUT

OUTPUT 1B

L/R

OUTPUT 1A

TEMP  
PROBE

E175040 (1) 6 AWG

E175040 (1) 6 AWG

PLUS

+



# AlphaCell™ Gel Batteries

*Ensure optimal performance for your outdoor broadband, cable television and telecommunications applications by incorporating AlphaCell batteries. With Alpha's standby batteries, you don't have to worry about leakage, frequent replacements, or cycling to obtain 100% capacity. They come ready to support your network runtime expectations right out of the box. Whether it is the industry-leading warranty, the durable Silver Alloy grid chemistry composition, the increased runtime, or the maintenance-free threaded inserts, expect optimum performance from AlphaCell batteries.*

## ➤ AlphaCell GXL

Alpha's standby battery offering incorporates true Gel Cell and Silver Alloy grid battery technologies, ensuring optimal performance for your outdoor cable, traffic or Wi-Fi application. AlphaCell batteries provide the ultimate warranty, longest runtimes and superior longevity in today's demanding outdoor non-temperature controlled cable power environments.

## ➤ AlphaCell GXL-FT

Alpha offers true Gel cell in front terminal configurations. The PWE-6FT enclosure provides maximum runtime density when using the 195 GXL-FT.

## ➤ AlphaCell HPL-FT

The AlphaCell HPL-FT series are constructed from a high performance lead alloy with front terminals for use with fiber deep XM2-300HP and XM2-906HP power supply systems. These batteries include central gassing system, snap-in front covers, integral flame arrestor and low self-discharge rates.

## ➤ AlphaGuard™

AlphaGuard monitors and protects your batteries by spreading the charge voltage equally across all the batteries in the string, ensuring that every battery, whether old or new, is properly charged. With an ideal voltage across each battery, life and runtime are optimized. Individual batteries in a string can be replaced as they fail, allowing good batteries to be left in service longer. This stops the wasteful and costly practice of replacing complete battery strings based on a single battery failure.

## ➤ Battery Testing Equipment

A fast, reliable and affordable testing process is now available with the development of conductance based battery measurement technology. By coupling conductance testing with a simple system load or voltage test, the system operator is armed with the quality of data necessary to know the status of their installed standby batteries and budget their replacement with confidence.



# AlphaCell™









## Broadband Batteries



AlphaCell 195 GXL

- Provides maximum runtime over the life expectancy of the battery
- True Gel Silver Alloy minimizes grid corrosion
- 100% out-of-box runtime capacity-no cycling required
- Industry leading runtime for Voice Over IP networks
- Maintenance-free threaded inserts — no periodic retorquing
- Full-replacement, non-prorated warranty

### AlphaCell Broadband Batteries

Models:	220 GOLD-HP 220 GXL	195 GOLD-HP 195 GXL	165 GXL	85 GXL-HP	195 GXL-FT	70 HPL-FT	115 HPL-FT	220 HPL-FT
Warranty <sup>1</sup> :	4 to 6 years	4 to 6 years	4 to 5 years	5 years	2 to 3 years	3 years	3 years	3 years
Service Life:	Extended	Extended	Extended	Extended	Long	Long	Long	Long
Runtime (minutes) <sup>2</sup> :	221	196	165	85	195	70	115	220
VLRA Battery Type:	Gel Silver Alloy				Gel	High Performance Lead Alloy		
Heat Resistant:	Extreme	Extreme	Extreme	Extreme	High	High	High	High
Hydrogen Emission:	Low	Low	Low	Low	Low	Low	Low	Low
Terminals:	Threaded insert 1/4" - 20 UNC			Threaded insert 10 - 32 UNF	16mm insert M6 thread	14mm insert M8 x 1.25 thread	14mm insert M8 x 1.25 thread	14mm insert M8 x 1.25 thread
Cells Per Unit:	6	6	6	6	6	6	6	6
Voltage Per Unit:	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
Conductance Value:	1175	1100	1000	600	1200	1050	1200	1600
Max. Discharge Current (A):	900	900	800	600	400	1000	1000	1000
Short Circuit Current (A):	2800	2600	2500	2200	3000	1400	2000	3500
10 Second Volts @ 100A:	11.4	11.3	11.2	10.8	10.8	11.3	11.5	11.7
Ohms Impedance 60Hz:	0.0050	0.0050	0.0055	0.0065	.0041	0.0065	.0041	.0025
Capacity at 20hrs (to 1.75VPC):	109AH	100AH	86AH	50AH	110AH	42AH	62AH	107AH
BCI Group Size:	31	31	27	22	N/A	N/A	N/A	N/A
Weight (lb/kg):	73 / 33.2	67 / 30.5	63 / 28.6	39.6 / 18	76.3 / 34.5	27.9/15.3	46.2/22.2	78.5/36
Dimensions H x W <sup>3</sup> x D <sup>3</sup> (in/mm):	8.5 x 13.4 x 6.8 / 215 x 341 x 173		8.1 x 12.5 x 6.8 / 205 x 318 x 173	8.1 x 9 x 5.5 / 206 x 228 x 139	11.2 x 4.3 x 15.6 / 285 x 110 x 395	8.2 x 3.8 x 9.8 / 209 x 97 x 249	10.3 x 4.2 x 11.3 / 263 x 108 x 287	11.3 x 4.2 x 15.6 / 287 x 108 x 396
Operating Temperature Range								
Discharge:	-40 to 71°C / -40 to 160°F	-40 to 71°C / -40 to 160°F	-40 to 71°C / -40 to 160°F	-40 to 71°C / -40 to 160°F	-40 to 71°C / -40 to 160°F	-40 to 60°C / -40 to 140°F	-40 to 60°C / -40 to 140°F	-40 to 60°C / -40 to 140°F
Charge (with temp compensation):	-23 to 60°C / -9.4 to 140°F	-23 to 60°C / -9.4 to 140°F	-23 to 60°C / -9.4 to 140°F	-23 to 60°C / -9.4 to 140°F	-20 to 50°C / -4 to 122°F	-40 to 60°C / -40 to 140°F	-40 to 60°C / -40 to 140°F	-40 to 60°C / -40 to 140°F
Float Charging Voltage @ 25°C / 77°F (Vdc):	13.5 to 13.8	13.5 to 13.8	13.5 to 13.8	13.5 to 13.8	13.6 to 13.8	13.5 to 13.6	13.5 to 13.6	13.5 to 13.6
AC Ripple Charger:	0.5% RMS or 1.5% of float charge voltage recommended for best results. Max. allowed = 4%V pk to pk							
								
	220 Gold-HP	195 GXL	165 GXL	85 GXL-HP	195 GXL-FT	70 HPL-FT	115 HPL-FT	220 HPL-FT

#### Notes:

<sup>1</sup> Warranty varies by country and region. Consult your sales person for details.

<sup>2</sup> Runtimes calculated using a 25A DC constant current load with voltage discharge to 1.75V/cell @ 25°C / 77°F. 195GXL-FT runtime at 25A to 1.75VPC @ 25°C / 77°F. 10 cycles required to obtain maximum runtime charge.

<sup>3</sup> Dimensions at top of battery except for 195GXL-FT dimensions at battery base.

<sup>4</sup> In Canada, the Gold warranty is 6 years when AlphaGuard™ Charge Management is used in the battery string, and 5 years if AlphaGuard Charge Management is not used.



# AlphaCell™ Runtime

## Broadband Batteries



AlphaCell 220 GXL

### XM2-915, XM2-922 and GMX Runtime (minutes)

90Vac @	4A			6A			8A			10A		
Model:	220	195	165	220	195	165	220	195	165	220	195	165
3 batteries:	508	453	396	320	285	249	236	209	193	186	165	144
4 batteries:	701	625	546	444	396	346	329	293	256	261	232	203
6 batteries:	1091	978	853	701	625	546	523	465	407	418	372	325
8 batteries:	1487	1338	1165	960	859	750	720	643	562	577	515	450
9 batteries:	1686	1519	1322	1091	978	853	820	733	640	659	587	514
90Vac @	12A			14A			16A			18A		
Model:	220	195	165	220	195	165	220	195	165	220	195	165
3 batteries:	149	132	115	119	106	92	101	89	77	87	78	66
4 batteries:	210	187	163	169	151	132	144	128	112	124	111	96
6 batteries:	339	301	264	275	245	214	236	209	183	204	182	159
8 batteries:	478	419	367	385	341	299	329	293	256	288	255	223
9 batteries:	538	479	419	440	391	342	377	335	294	329	293	256

Above calculations based on an AC load with a .92 cable plant power factor.

60Vac @	4A			6A			8A			10A		
Model:	220	195	165	220	195	165	220	195	165	220	195	165
3 batteries:	798	712	622	508	453	396	377	335	294	300	267	233
4 batteries:	1091	978	853	701	625	546	523	465	407	418	372	325
6 batteries:	1686	1519	1322	1091	978	853	820	733	640	659	587	514
8 batteries:	2288	2067	1798	1487	1338	1165	1122	1006	877	904	809	706
9 batteries:	2590	2345	2037	1686	1519	1322	1273	1143	997	1027	921	803
60Vac @	12A			14A			16A			18A		
Model:	220	195	165	220	195	165	220	195	165	220	195	165
3 batteries:	242	215	188	196	174	151	166	148	125	144	128	107
4 batteries:	339	301	264	275	245	214	236	209	182	204	182	155
6 batteries:	538	479	419	440	391	340	377	335	290	329	293	252
8 batteries:	741	660	577	607	541	470	523	465	402	458	407	351
9 batteries:	843	753	658	692	617	538	597	531	462	523	465	402

Above calculations based on an AC load with a .92 cable plant power factor.

### XM2-906HP Runtime (minutes)

Estimated Runtime	1A	2A	3A	4A	5A	6A	7A	8A
85 GXL, 60V Runtime:	948	576	444	342	264	222	186	162
85 GXL, 90V Runtime:	600	366	276	216	168	138	-	-
70 HPL, 60V Runtime:	774	474	366	282	228	186	168	138
70 HPL, 90V Runtime:	498	300	228	180	138	114	-	-
115 HPL, 60V Runtime:	1200	756	582	456	354	300	252	222
115 HPL, 90V Runtime:	762	486	366	288	222	186	-	-

With XM2-906 and three batteries installed.

\* Note: Battery temperature = 25°C / 77°F, Load PF = 0.92, Accuracy: 0.25 hour

### AlphaCell 195 GXL-FT Runtime Specifications (minutes)

XM2 90Vac @	6A	8A	10A	12A	14A	16A	18A	20A
3 batteries:	283	195	153	123	100	85	76	67
4 batteries:	404	280	211	170	145	123	105	91
6 batteries:	662	467	353	281	230	194	170	153
8 batteries:	960	654	501	403	331	280	242	211

Runtimes calculated using a 25A DC constant current load with voltage discharge to 1.75V/cell @ 25°C / 77°F.

### XM2-300HP Runtime (minutes)

Power Supply in W:	50	100	150	200	250
AlphaCell 70 HPL-FT:	439	200	133	107	77
AlphaCell 85 GXL:	531	240	160	128	98
AlphaCell 195 GXL:	1074	499	337	272	209
AlphaCell 220 GXL:	1232	577	391	315	243

Runtimes based on one battery.

### AlphaCell 195 GXL-FT Runtime Specifications (minutes)

XM2 60Vac @	6A	8A	10A	12A	14A	16A	18A	20A
3 batteries:	467	325	246	195	163	142	123	107
4 batteries:	648	467	353	281	230	194	170	153
6 batteries:	1077	789	576	461	386	325	280	245
8 batteries:	1447	993	847	654	541	461	403	353

Runtimes calculated using a 25A DC constant current load with voltage discharge to 1.75V/cell @ 25°C / 77°F.

# AlphaGuard™

## Battery Charge Management System

- Extends battery life
- Spreads charge voltage equally across batteries
- Compensates for battery differences as they age
- Replace single batteries, not the entire string
- Single battery connections for charge management and status monitoring
- Safe unattended operation designed to CSA C22.2 No. 107.1 and UL 1778 Standards
- Optional Potted AlphaGuard for underground battery vault applications



AlphaGuard CMT-3

### AlphaGuard

Models:	
AG-CMT-3:	AlphaGuard Charge Management SC, 36V —including 36Vdc battery string interface cable
AG-CMT-4:	AlphaGuard Charge Management SC, 48V —including 48Vdc battery string interface cable
Configuration	
Quantity:	One (1) AlphaGuard is required per battery string
Service Location:	With the battery string
Mechanical	
Housing Material:	High impact plastic
Dimensions H x W x D (in/mm):	1.4 x 4.8 x 4.3 / 36 x 122 x 108
Weight (lb/kg):	0.8 / .36
Electrical	
Batteries:	Individual 12Vdc nominal batteries configured into 36 or 48Vdc strings
Circuit Protection:	Fast blow fuse, reverse polarity protected
Quiescent Current Draw:	1mA max. (Current consumed by AlphaGuard after low voltage total shutdown)
Charge Management:	Most effective during float period of charge
Max. Current:	2A @ 25°C / 77°F
Quality of Final Balance:	±100mV max. between any two (2) batteries
Charging Efficiency:	80 to 90%
Charge Balance:	±100mV typical
Low Voltage Cutoff:	34.5Vdc/46Vdc ±5%
Communication to XM2:	AG-DSM cable supplies battery readings to a DSM status monitoring card
Voltage Sense Regulation:	±100mV
Environment	
Operating Temperature:	-40 to 55°C / -40 to 131°F
Humidity	5 to 95% non-condensing
Warranty	
Warranty:	5 years

The AlphaGuard employs a patented Charge Management Technology (CMT) to shuttle excess charge current to batteries requiring a greater charge, and is contained in a small plastic enclosure that installs directly on top of one the batteries in the string or in the optional battery integration tray. A short service cable connects the AlphaGuard to each of the batteries in the string. Both 36Vdc (3 battery) and 48Vdc (4 battery) versions are available. One AlphaGuard is required per string.

An AlphaGuard configured with the optional voltage sense cabling and interface module (DSM, ESM, EDSM or External DOCSIS®) allows the AlphaGuard to interface with a status-monitoring module. Two AlphaGuard modules can be connected to single interface module. Refer to individual interface module documentation for additional information.



Potted AlphaGuard CMT-3



AG-DSM-S9-Cable



AG-DSM-D9-Cable



AG-DSM-D35-Cable



AG-DSM-S35-Cable



Battery Cable 36V 6ft



Battery Cable 48V 6ft

# Battery Testing Equipment

## AlphaCell™ Battery Testing Equipment

- Complete battery life trending through conductance tests
- Non-intrusive conductance measurements do not reduce string life
- Quick, accurate measurements and data recording reduce on-site time
- Simple pinpoint testing requires only access to two battery posts or straps
- Enables early detection of questionable batteries in the network





Celltron Essential  
CTE-1200AT

### Battery Testing Equipment

Model:	Celltron Essential	Celltron Advanced™
Model Number:	CTE-1200AT (w/temp. sensor)	CTA-4000 (kit) CTA-2000 (analyzer only)
Applications:	Tests 6 and 12V batteries with data retention	Tests individual lead acid cells or monoblocs (up to 16V) in any common configurations
Voltage:	1.5 to 20Vdc	1 to 20Vdc
Conductance:	100 to 9999 Siemens	100 to 19990 Siemens
Test Data Storage:	Up to 144 consecutive tests can be stored internally	16 string locations of 480 test results stored internally
Accuracy:	+2% across test range	+2% across test range
Voltmeter Resolution:	10mVdc	5mVdc
Environment		
Operating Temperature:	0 to 40°C / 32 to 104°F	
Humidity:	95% non-condensing	

Conductance Technology/Industry Approvals and Recommendations:
IEEE Standards 1188 and 484 EPRI Guide for testing stationary batteries Guide for testing stationary batteries International Telecommunications Energy Conference Bellcore T1Y1 Presentation for American National Standards Institute International Lead Zinc Research Organization Battery Council International
Applications
Cable TV/Broadband Power Networks • Outside Plant Batteries • Headend DC/AC Batteries • Premise Backup Supplies (FTTx) 6/12V, 5 to 600AH Stationary Batteries Security system batteries Emergency lighting batteries
Features and Benefits
Simple - One-step testing, no instrument inputs or adjustments required. Quick - Battery voltage and conductance displayed in less than 10 seconds. Test an entire 48V string in less than 1 minute. Safe - Utilizes patented conductance technology, a passive method that minimizes technician risk. Accurate - Field test proven to ±2% accuracy across test range. Conductance method recognized by IEEE standard for the testing of lead-acid batteries with proven correlation to battery capacity. Economical - Efficient and accurate battery tester priced to fit into every technician's tool kit.

### Kit Contents

Celltron Essential CTE-1200AT	Celltron Advanced Kit CTA-4000AT
<b>Contains:</b> CTE-1200AT tester PowerSure Software Infrared PC data cable	<b>Contains:</b> Protective boot Rechargeable battery pack Infrared PC data receiver and software Infrared printer Infrared temperature sensor Protective carrying case Both clamp and probe cables Spare fuses, printer paper, probe tips
	

Optional Equipment:
Handheld Printer Infrared Module for PC







# Fiber Power

*Fiber to the home is emerging as the 21st Century infrastructure for the information economy. Alpha Technologies offers a complete portfolio of fiber to the home powering options with the FlexPoint™ line of 12Vdc single-family unit solutions (SFU) and the FlexNet™ line of 48Vdc multiple dwelling unit (MDU) and small office home office (SOHO) power supplies. All of Alpha's powering solutions are engineered to perform reliably in the most demanding environmental conditions while optimizing battery life and performance.*

## ➤ FlexPoint 1230 Series

The FlexPoint 1230, 30Watt, 12Vdc standby power supply is an environmentally-hardened standby power supply intended to be placed indoor or outdoor in sheltered locations. Its compact size allows placement in the most densely populated structured medial enclosures. The FP1230 includes a unique emergency battery reserve function that provides greater lifeline service availability by preserving 25% of the usable battery capacity for user initiated emergency telephone calls. User interfaces include visual status indicators, audible alarms, silence alarm button and an auxiliary 12Vdc power input port allowing additional battery capacity to be added for longer standby runtimes.

## ➤ Integrated Fiber Enclosure (IFE)

The FlexPoint IFE-A30-1 Integrated Fiber Enclosure from Alpha Technologies provides a reliable, compact and cost-effective means to simplify RFoG deployment. The enclosure contains a fiber management system, an 8-way coaxial splitter and a FlexPoint power supply with provisions for installing RFoG devices (an RFoG device can be installed by Alpha Technologies upon request). The door-mounted FlexPoint power supply provides 20 hours of battery backup runtime. The enclosure is lockable making this system a secure and convenient solution for Micro Node management. The IFE-A30-1 is fully-configurable platform designed to accommodate specific customer applications and the component integration is provided by Alpha Technologies prior to shipping.

# FlexPoint™ 1230 Series

## Indoor 12Vdc 30W UPS

- Telecommunications grade power system provides 30W of 12Vdc power for FTTx and RFoG applications
- Coax F-style and PacketCable™ interface options
- Emergency battery reserve for greater E911 availability
- Battery management system provides optimum service life and runtime
- Local visual and audible status indicators and remote alarm interface






FlexPoint 1230 Series

### FlexPoint 1230 Series

Models:	Description
FP1230-01-A:	120Vac 3-Conductor NEMA 5-15 Power Cord
FP1230F-01A:	120Vac 3-Conductor NEMA 5-15 Power Cord F Connector
FP1230-02-B:	240Vac 3-Conductor Schuko Input Power Cord
FP1230-02-C:	240Vac 3-Conductor United Kingdom Input Power Cord
FP1230-02-D:	240Vac 3-Conductor Australia/New Zealand Input Power Cord
<b>Input OPS</b>	
AC Input Voltage:	120Vac or 240Vac
AC Input Frequency:	50/60Hz
Surge Protection:	ANSI/IEEE Std. C62.41 to Category A, B or C requirements, using a "Ring Wave" or "Combination" waveform, at a level of 6kV
<b>Output</b>	
Operational Output Power:	30W max. continuous (ONT load + battery charge + heater)
Output Voltage:	12Vdc Nominal (Battery voltage upon loss of AC)
Output Power Loading:	Following GR-909 telephone lines in various states, e.g., ringing, off-hook, on-hook, data, and video operation requirements
Auxiliary Input Voltage:	10.5 to 15.5Vdc
<b>Mechanical</b>	
Housing Size H x W x D (in/mm):	7.75 x 8.75 x 3 / 177 x 224 x 76.2
Weight (lb/kg):	3 / 1.4
Battery 7.2AH (lb/kg):	5.7 / 2.6
Battery 12AH (lb/kg):	8.4 / 3.8
<b>Battery</b>	
Battery Type:	Maintenance free, leak-proof, sealed VRLA (valve regulated lead acid)

<b>Visual Indicators</b>		
System:	Green LED	Power is available at the output (AC, battery or auxiliary)
Battery:	Green LED	Battery discharging to 25% SOC (main or auxiliary)
	Green Flash	Battery at 25% SOC
Replace Battery:	Red LED	Battery not present or failed self test
Auxiliary Power Source:	Green LED	Valid auxiliary power source connected
<b>Audible Status Indicators</b>		
Loss of Input Power:	Single, one second chirp	
Low Battery:	Single chirp every 15 seconds at 25% SOC	
Replace Battery:	Double chirp every fifteen minutes	

<b>Push Buttons</b>	
Silence Alarm:	Suppresses the audible alarm for 24 hours
Battery Emergency Use:	Accesses reserve battery capacity
<b>Agency Compliance</b>	
System:	FCC part 15 Class B, CSA-NRTL\C (CSA60950), CE, C-Tick, RoHS to EU 2002/95/EC, Seismic Zone 4 rated per GR-63
<b>Environment</b>	
Storage Temperature:	-40 to 46°C / -40 to 115°F
<b>Operating Temperature:</b>	
Without Heater:	-20 to 46°C / -4 to 115°F
With Heater:	-30 to 46°C / -22 to 115°F
Note: Operating temperatures based on AX-LONGBAT-7.	
Humidity:	0 to 95% non-condensing
Elevation Operation Max.:	3000m / 10000ft derate at 2°C / 3.6°F per 1000ft above 6000ft
Elevation Storage Max.:	15000m / 50000ft
<b>Interface</b>	
DC Output and Alarm:	Removable Screw Terminal Plug accepts seven (2) 16AWG and (7) 24AWG wires or COAX F-style
Auxiliary DC Input:	3.5mm (OD), 1.3mm (Pin, positive) coaxial barrel connector
AC Input:	IEC320/C6 Receptacle
Line Cord:	NEMA 1-15 to IEC 320 C5 (Other cords available)
<b>Warranty</b>	
FlexPoint 1230:	3 years repair or replace
Batteries Available:	1 year or 3 year
<b>Supporting Options</b>	
AX-STDBAT-7 — Battery 7.2AH AGM, 1 year warranty	
AX-LONGBAT-7 — Battery 7.2AH AGM, 3 year warranty	
AX-STDBAT-12 — Battery 12AH AGM, 1 year Warranty	
FP1230-CVR — FlexPoint 1230 12AH battery cover with strap	
FP1230-HK — FlexPoint 1230 heater Kit	
FTTH-CBL — ONT hook-up cable, 2x16AWG and 5x24AWG, CMX UL listed	
AUX-CBL — Cable, auxiliary power plug 3m Long	

		
Shown with cover removed, battery, auxiliary power cable and ONT hook-up cable	Connector interface options and cable strain relief	COAX F-style Interface



# Integrated Fiber Enclosure

Supporting RFoG Deployment

- RFoG Micro Node Integration
- Integrated power supply with 20 hour battery back up runtime
- Fiber management
- Coaxial management
- Lockable secure box
- Indoor enclosure
- Small footprint 12" x 12" x 8"



Integrated Fiber Enclosure

### Integrated Fiber Enclosure Specifications

Specifications	
Enclosure	
Dimensions H x W x D (in/mm):	12W x 12H x 8D / 305W x 305H x 203D
Weight (lb/kg):	8 / 3.6
Coax Management:	8- way Coax Splitter
Fiber Management:	Fiber wrap spool 12-fiber spice tray
Power:	FlexPoint 1230
Input	
AC Input Voltage:	120Vac or 240Vac
AC Input Frequency:	50/60Hz
Surge Protection:	ANSI/IEEE Std. C62.41 to Category A, B, or C requirements, using a "Ring Wave" or "Combination" waveform, at a level of 6kV
Output	
Operational Output Power:	30W max. continuous
Output Voltage:	12Vdc Nominal (Battery voltage upon loss of AC)
Auxiliary Input Voltage:	10.5 to 16.5Vdc
Battery	
Short Circuit Protection:	Electronic
DC Ripple:	150mV

Environment	
Storage Temperature:	-40°F to 115°F (-40°C to 46°C)
Operating Temperature:	-4°F to 115°F (-20°C to 46°C)
Note: Operating temperatures based on AX-LONGBAT-7.	
Humidity:	0 to 95%
Elevation Operation Max.:	10,000ft (3000m) Derate at 2°C per 1,000 ft above 6,000 ft
Elevation Storage Max.:	50,000ft (15000m)
Line Cord:	NEMA 1-15 to IEC 320 C5 (Other cords available upon request)
Warranty	
FlexPoint 1230:	3-year repair or replace
Batteries Available:	1-year or 3-year warranty




Integrated Fiber Enclosure

# Power

[www.alpha.com](http://www.alpha.com)

Alpha Technologies Inc.  
3767 Alpha Way  
Bellingham WA 98226  
USA  
Tel: +1 360 647 2360  
Fax: +1 360 671 4936

member of The  Group™

Alpha Technologies Ltd.  
4084 McConnell Court  
Burnaby BC V5A 3N7  
Canada  
Tel: +1 604 430 1476  
Fax: +1 604 430 8908

Alpha Technologies Europe Ltd.  
Twyford House, Thorley  
Bishop's Stortford, Hertfordshire  
CM22 7PA  
United Kingdom  
Tel: +44 1279 501110  
Fax: +44 1279 659870

Alpha Technologies GmbH  
Hansastraße 8  
D 91126 Schwabach  
Germany  
Tel: +49 9122 79889 0  
Fax: +49 9122 79889 21

AlphaTec Ltd.  
339 Saint Andrews Street  
Suite 101 Andrea Chambers  
3307 Limassol  
Cyprus  
Tel: +357 25 375675  
Fax: +357 25 359595

AlphaTEK ooo  
Khokhlovskiy Pereulok 16  
Stroenie 1 Office 403  
109028 Moscow  
Russia  
Tel: +7 495 916 1854  
Fax: +7 495 916 1349

Alpha Technologies  
Unit 504 5/F Fourseas Bldg.  
No. 208 212 Nathan Road  
Kowloon, Hong Kong  
China  
Tel: +852 2736 8663  
Fax: +852 2199 7988

Visit [www.alpha.com](http://www.alpha.com) for additional broadband power information.

Alpha Technologies

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